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ILLUSTRATIONS

OF

PULMONARY CONSUMPTION.

ILLUSTRATIONS

OF

PULMONARY CONSUMPTION,

ITS ANATOMICAL CHARACTERS, CAUSES, SYMPTOMS
AND TREATMENT.

TO WHICH ARE ADDED,

SOME REMARKS ON THE CLIMATE OF THE UNITED STATES,
THE WEST INDIES, &c.

WITH THIRTEEN PLATES, DRAWN AND COLOURED FROM NATURE.

SECOND EDITION.

BY SAMUEL GEORGE MORTON, M.D. 1820

LATE PHYSICIAN TO THE PHILADELPHIA ALMS-HOUSE HOSPITAL; MEMBER OF THE ROYAL
MEDICAL SOCIETY OF EDINBURGH; OF THE PHILADELPHIA MEDICAL SOCIETY;
OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF THE UNIVERSITY
OF NEW YORK; OF THE AMERICAN PHILOSOPHICAL SOCIETY;
OF THE ACADEMY OF NATURAL SCIENCES OF
PHILADELPHIA, &c. &c. &c.

"Misera hæc tabes, sœva, atrox et insensibilis, teneros et amabiles depascens, cœde et luctu patriam
implet."—GREGORY.

"A physician should consider his obligations to his profession and society undischarged, who has not
attempted to lessen the number of incurable diseases. This is my apology for attempting to make CONSUMP-
TION the object of a medical inquiry."—RUSH.

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1837.

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TO

JOSEPH PARRISH, M.D.

OF PHILADELPHIA,

AND TO

SAMUEL JACKSON, M.D.

PROFESSOR OF THE INSTITUTES OF MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA,

THIS WORK

IS MOST RESPECTFULLY INSCRIBED

BY

THE AUTHOR.

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PREFACE.

THE author of a new book may sometimes be compared to the voyager, who, after circumnavigating the globe, and viewing its mountains, islands, bays, and rivers, returns home without having added much that is new to the chart he took with him: and yet, to continue the metaphor, we may, even under such circumstances, read the narrative with pleasure and instruction; for, while it revives and confirms our previous knowledge, it perhaps throws some new light on remote and interesting objects.

It may be urged, that the subject of the following memoir has already occupied the ingenuity of so many able writers, as scarcely to leave room for a new idea: but a disease that has ever caused a large proportion of the mortality in almost all countries, and which attacks the human frame in every phasis of its development, from embryo existence to extreme old age, justly claims the untiring scrutiny of the physician.

It has often surprised me, that of the works of Bayle and Louis, we have no American editions. Dr. Forbes's translation of Laennec, is executed with ad-

mirable precision and elegance; and had it been republished in this country at the time the present volume was commenced, it is probable the latter would never have been offered to the public.

It may reasonably be asked, what my opportunities have been for an inquiry of so much interest and difficulty, as that which forms the subject of this volume.

My attention was first particularly directed to the diseases of the lungs, by an attendance on the clinical lectures of the celebrated Laennec; who, with astonishing acuteness of mind, and personal urbanity, combined the faculty of imparting a portion of his enthusiasm to all who heard him.

On my return to this, my native city, I resolved to pursue with ardour an inquiry for which I had imbibed so strong an interest. But facilities are not always at our command; and before I was able to realise them, several years had already elapsed. At length, in 1829, I received the appointment of physician to the Philadelphia Almshouse Hospital.

The wards of this institution habitually contain several hundred patients; exhibiting almost all the maladies to which man is subject, and especially those of a chronic nature, among which phthisis may be said to predominate. The deaths from this disease alone are little short of one hundred annually; and the fa-

cilities of pathological investigation in this institution are unrivalled on the American continent.

To these advantages I have added others, derived from an extensive private practice; and have long made it a rule to preserve the histories of my cases, and to avail myself of every opportunity of comparing the opinion I had formed during the life of the patient, with the appearances of the body after death.

From a large number of cases thus recorded, I have selected, for this work, such as best serve to give an idea of the various conditions of consumption; and in many instances the cases are further illustrated by coloured plates.

On these lithographed illustrations I have bestowed the utmost attention; the preparations from which they were derived, were placed, as soon as obtained, in the hands of an excellent artist, and every character, whether of organization or of colour, was immediately transferred to paper under my personal supervision.

In arranging the cases, many of which have chiefly an anatomical interest, I have, as a general rule, endeavoured to restrict the details to the points under consideration at the time, and to reserve whatever relates to the treatment of phthisis, for the last chapter: for it is obvious that unabridged histories of this kind would involve interminable repetitions, and extend the limits of this work far beyond the author's design.

In fact, my original plan embraced little beyond the pathological anatomy of the lungs; but year after year the subject expanded before me, until I have been induced to examine it in nearly all its bearings.

Thus, after the manner of Laennec and Louis, I have commenced with an examination of the anatomical characters of consumption, and have endeavoured to trace its changes from the incipient granule to open abscess. Some brief remarks have been devoted to its pathology, followed by a more extended view of its causes, symptoms and treatment.

Perhaps I should apologise for introducing the initiatory chapter on the morbid changes of structure which accompany phthisis, especially as the remarks under this head are wholly elementary. But it occurred to me that even a brief notice of those changes, might be acceptable to many whose avenues to pathological information have been limited; and especially as the chapter in question embraces some leading features in morbid anatomy, and principles of general application.

I much regret that, with respect to the relative advantages of climate in different parts of this country, the details should be so meagre, but notwithstanding my sedulous inquiries for facts of this kind, I have met with comparatively little success, although I am

sensible that many sources of information may have escaped my research.

A subject, however, of such paramount interest, cannot remain much longer uninvestigated; and I seize the present occasion to express a hope, that the practitioners in various sections of the United States will give more attention to medical statistics, embracing especially the mean range of the thermometer, the prevalent diseases, comparative tables of mortality, the changes incident to the progress of cultivation and civilisation, and an examination of the question, how far, in these varied localities, phthisis and scrofula appear to be conjoined.

Medical men attached to the army have great facilities for inquiries of this kind, and those who reside in the vicinity of the Indian tribes, have it in their power to communicate much valuable information. Dr. Rush, in his *Medical Inquiries and Observations*, speaks of consumption as a disease almost unknown among the aborigines of this continent: while the late Professor Barton maintained the contrary opinion; derived, however, as I have reason to believe, from the prevalence of scrofula among some of the more northern tribes.

Few inquiries are more interesting to medical men, than those which illustrate the influence of the refinements of civilised life in the production of disease;

and in no instance can this question be examined with more interest than in reference to consumption.

As the result of several years observation and reflection, I now submit this work to my professional brethren; and if in its pages they meet with fewer novelties than they could have desired, I trust they will at least award me the merit of illustrating an intricate subject in a conspicuous manner; for it has not been my object to originate a striking hypothesis, or to advance imposing novelty in practice: but rather to convey, with reasonable brevity, the results of my own observation and experience, compared with the views of those who have preceded me in this inquiry.

I cannot conclude this preface without expressing my grateful thanks to those resident physicians of the Philadelphia Alms-house Hospital, whose aid will be more specifically acknowledged in the course of the following pages; and whose professional zeal and intelligence have been of infinite service to me in the pursuit of my inquiries.

Finally, whatever acknowledgments an author can owe to his publishers, I owe to mine; more especially for their unhesitating liberality in meeting the heavy expenses inseparable from a work of this kind.

Philadelphia, December 1, 1833.

PREFACE TO THE SECOND EDITION.

THREE years have now elapsed since the first publication of this work ; and during that interval I have availed myself of every source of information on the subjects of which it treats. The former edition is, therefore, but the skeleton of the present one ; for it will be observed that the whole work has been re-written, and that the quantity of matter (exclusive of the numbered cases, which remain nearly as before) is considerably more than double.

Within the period above mentioned I have also enjoyed the advantage of personal observation on the climate of some of the West India islands. The result of my inquiries on this head are recorded in the following pages, and will be found, I trust, to embrace some useful information.

Since this work first appeared, several authors of celebrity have published the result of their observations on the same subject : among them I may especially mention Drs. Clarke, Davis, and Latham. The work of M. Louis has been translated into English, and ably edited by Dr. Cowan ; and I have also read, with

great instruction, some recent memoirs in the French Journals. Of these last, however, the value is mainly statistical; and in order to subserve the purpose of comparison, I have given, in the Appendix, such abstracts as appeared most deserving of attention.

S. G. M.

431 Arch Street, Philadelphia, February 8, 1837.

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ILLUSTRATIONS
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PULMONARY CONSUMPTION.

CHAPTER I.

A BRIEF VIEW OF THOSE MORBID CONDITIONS OF THE LUNGS AND THEIR APPENDAGES, WHICH USUALLY COEXIST WITH PHTHISIS.

IN examining the lungs of persons who have died of Phthisis, we almost invariably find the tubercular affection complicated with organic lesions of a different character. It would be foreign to the plan of the present work to enter into the details of these numerous diseases; the following remarks are consequently of an elementary nature designed chiefly to enable the observer to distinguish tubercular matter from the morbid changes that accompany it. Most of these changes may be either causes or consequences of phthisis; although the nicest examinations do not always enable us to say which has been the primary, or which the consecutive affection.

PLEURISY.

Pleuritis. Inflammation of the pleura.—Acute Pleurisy is ushered in by severe, pungent, fixed pain, which is

aggravated by every motion of the body, but especially by coughing and speaking, and by efforts at full respiration. The patient is most at ease when lying on the sound side. The pain spreads rapidly from the point of origin, often extending over the whole side of the chest, and even to the opposite side; in the latter case the disease is called a *double pleurisy*.

If these symptoms are not relieved, the disposition to cough increases in common with an aggravation of pain, dyspnoea, &c. The countenance assumes an expression of great anxiety, is of a livid colour, and a sense of suffocation continues almost to the moment of death.

Pleurisy commonly produces one or more of the following morbid changes in the pleura: these changes, however, do not necessarily involve the life of the patient; for every day's experience goes to show that they are often followed by restoration to health.

Adhesions.—One of the first consequences of inflammation of the pleura, is an exudation, on its external surface, of coagulable lymph, which is in fact the fibrinous* portion of the blood. This is considered by Laennec as a kind of suppuration proper to serous membranes.† It is of a yellow, opaque exudation, at first not thicker than cream, but soon acquiring a firmer consistence. This appearance, which is the first stage of false membranes, is often in patches, or rounded granules on the pleura, other portions of the membrane presenting a spotted redness.

* Chemical analysis has proved it to be pure fibrine: M. Andral suggests with great probability, that this principle constitutes the basis of all organised morbid productions, both in parenchymatous and membranous tissues.

† L'Auscult. Med. t. i. p. 331.

The exudation soon becomes organised, firm, and almost inseparably attached, presenting most frequently the following characters:

Thread-like cords, and flattened bands, passing from one surface of the pleura to the other, diaphanous, and sometimes more than two inches in length. Their characters closely resemble those of cellular tissue.

Occasionally these cords attain a great thickness, and in some rare instances enclose adipose matter. (Pl. XI. fig. 2.) (*Case 18.*)

Again, it is not unusual to find the entire surfaces of the pleura closely and directly adherent, by means of numerous layers of cellular tissue resembling the pleura itself. This structure is admirably seen when it coexists with general dropsy.

Finally, there is a species of false membranes of a fibro-cartilaginous consistence, which results from long continued irritation of the pleura. It is formed by successive deposits of lymph between the natural membranes, separating the latter widely apart, and even attaining the thickness of an inch. Its colour assumes various shades of yellow and white, with a tinge of gray. (Pl. XI. fig. 1. and Pl. IX.) This substance also assumes a spheroidal form, and may be readily mistaken for tubercles.

When the secretion of lymph takes place in the fissures between the lobes, it may occupy the whole length and breadth of those fissures, and attain a considerable thickness. These white laminated masses may occasion some confusion in an incautious dissection from their resemblance to cicatrices, with which they have doubtless been sometimes confounded.

It sometimes occurs that the secretion of coagulable lymph is accompanied with an effusion of red blood; this constitutes the *hæmorrhagic pleurisy* of Laennec. (Case 14.)

Effusion.—Effusion into the cavity of the pleura does not necessarily follow the inflammation of that membrane, for it is often absent: but there is sufficient evidence that when it does occur it is mostly simultaneous with the inflammation itself, as Laennec has demonstrated. This fluid is sometimes in great quantity, compressing the lung and suspending its functions. (Case 26.) It is serous, or sero-purulent, sometimes tinged with blood; it is also seen of a light wine-colour, and again of a milky or turbid hue, derived from the morbid secretions of the pleura, which are occasionally observed in flocculent masses swimming in the fluid.

When, in consequence of a wound of the pleura, blood is effused into its sac, the disease is called *Hæmorthorax*.

That kind of effusion which is occasioned by ulcerous perforation of the pleura, will be more particularly noticed hereafter.

PNEUMONIA.

Peripneumonia. Pneumonitis. Inflammation of the lungs.—Inflammation of the lungs generally commences with a chill, and pain in some part of the thorax, followed by oppression, difficult respiration, cough and expectoration of a viscid mucus, more or less mixed with blood. The skin becomes hot, the face flushed, the pulse full and frequent, the breathing laborious and hurried, and the anxiety extreme.

According to the duration of pneumonia, it induces one or several of the following pathological conditions:

1. *Engorgement.* *Engouement.*—Inflammation of the lungs is probably confined, at least in its incipient state, to the cellular tissue* of those organs, which is then engorged with blood, rendering them more dense than natural, and of a livid colour with a violet tinge. The sero-sanguineous fluid shows freely from an incision. If in this state the lungs be carefully washed, they resume their crepitancy and other natural characters.

This stage is susceptible of perfect resolution.

2. *Red hepatization.* *Ramollissement rouge.* (Andral.) *Carnification.*—This condition marks the *second stage* of pneumonia. It is readily identified by its deep red colour, its firm consistence, and its solid appearance; the lung no longer floats in water, and, if torn, presents a rough, granulated surface, like that of the liver. (Pl. III. fig. 2.) When cut into, scarcely any moisture escapes; but if pressure be applied near an incised surface, a small quantity of sero-sanguineous fluid flows out. An incision also exposes numerous white points and lines, which are unaltered portions of the blood-vessels and bronchial canals. I have known these points to be mistaken for tubercles.

This stage is also susceptible of entire resolution.

3. *Yellow hepatization.* *Purulent infiltration.* *Ramollissement gris.* (Andral.) *Suppuration.*—This is the *third stage* of pulmonary inflammation, and presents the following characters:

* There is a difference of opinion on this head among pathologists, some of whom suppose the *air-cells* to be the seat of disease.

The lung is hard and granulated, as in the former stage, and has a remarkable straw-yellow colour, mostly pale, but occasionally in young persons of a brighter hue. If the lung be cut, an opaque, viscid, yellowish fluid escapes, resembling pus. The yellow portions of lung are often interspersed with patches of red hepatization, giving the incised surface a marbled appearance, not unlike certain adipose conditions of the liver.

Resolution sometimes follows this stage of pneumonia.

4. *Induration.* *Induration grise et rouge.* (Andral.)—If, after hepatization has taken place, resolution does not follow, the lung gradually loses its red colour, and assumes a light gray tint. In some instances, however, it retains a dull red hue. This morbid structure is of a dense, dry consistence, often with a reticulated appearance from some remains of the air-cells, and mostly interspersed with tuberculoid granulations. When incised it yields a sound not unlike that obtained by cutting a sponge. Tubercles frequently form in it. (Pl. IX.)

I cannot believe with some authors, that gray induration ever results from simple chronic inflammation; but that, on the contrary, it is always preceded by acute inflammation, which not being resolved in its third stage, leaves the lung dense as in hepatization; the red globules and much of the granular structure having disappeared.

5. *Abscess.*—This is an extremely rare termination of simple pneumonia; so much so, that Laennec says he met with it but five or six times in many years.* The parietes of the cavity are formed by the surrounding pulmonary

* Laennec, L'ausc. Med.—Boisseau, Nosog. Organ. Tom. 2. p. 421.

tissue, and the cavities themselves are generally very small. In a great number of dissections I have but twice met with this condition of the lung. (*Cases 32 and 33.*)

6. *Gangrene*.—The colour of a gangrenous lung is a dirty green with spots of brown, black, and livid red. Sometimes it is circumscribed, the slough being contained within a distinct cavity, and the adjacent lung preserving a nearly healthy aspect; and at other times the gangrenous characters are gradually lost in the surrounding pulmonary tissue. This disease is mostly accompanied by a peculiarly foetid breath; and the odour of the lung itself is offensive beyond endurance. (*Case 32.*)

PLEURO-PNEUMONIA.

It is scarcely necessary to observe, that inflammation of the parenchyma of the lungs and of the pleura, frequently occur simultaneously—a complication which embraces the morbid changes proper both to pleurisy and pneumonia.

CONGESTION OF THE LUNGS.

*Pulmonary Apoplexy.** This is a very frequent disease, but unfortunately is seldom recognised except by one of its principal consequences—Hæmoptysis. Congestion, however, is to be suspected, when a person who has enjoyed previous good health, feels a sensation of heat in some part of the lungs, accompanied by oppressed breathing, languor, and alternate coldness and flushing of the

* The name of this morbid condition is due to Rush, (Med. Inq. and Obs. vol. 2. p. 87.) We owe the knowledge of its pathology to Laennec.

face, more especially if these symptoms occur suddenly, and rather simultaneously, and are *unconnected with pain*. I consider the latter to be the principal yet by no means a certain diagnostic, between this disease and acute pneumonia. The former is not necessarily connected with inflammation, but is often a mere congestion of blood in the inter-vesicular cellular membrane: when the blood permeates the membranes of the air-cells and minute bronchia, hæmorrhage is a necessary consequence, and is the only unequivocal symptom of this disease. Its anatomical characters have been elaborately investigated by Laennec, who admits their close analogy to hepatization, and even to engorgement of the lungs, yet draws the following distinctions between them: the apoplectic condition is circumscribed, very dense, brown, or dark red and granulated; when incised, it is dry, and loses its color, but not its firmness, by washing.

BRONCHITIS.

*Pulmonary Catarrh.**—This disease, so familiar to us by the names of *cold* and *catarrh*, is an inflammation of the mucous membrane lining the air-tubes of the lungs. It is at once recognised by its red colour, in some instances extremely bright, in others dull and mottled. The mucous membrane of the nose is often first attacked, the inflammation consecutively involving the larynx, trachea and bronchia. When it passes to the chronic state, ulceration follows, which may be recognised by numerous small,

* This affection is called *Peripneumonia notha* by the older authors, and is the *catarrhus suffocans* of Lieutaud.

irregular, white spots; these, when examined, are found to be partial excavations in the mucous surface. (Pl. XII. fig. 2.) When this inflammation becomes chronic in the larynx and trachea, ulceration is sometimes deep and extensive, even destroying the cartilages, and causing those alterations in the voice so common in phthisis. (Pl. X.) The long continuance of catarrhal affections, especially that form of them called *chronic mucous catarrh*, sometimes occasions *dilatation of the bronchia*. In this pathological state, the air-tubes become preternaturally enlarged, their mucous membrane thickened, and of a violet hue. (Case 15.)

The mucous membrane of the bronchia is capable of secreting genuine pus;* and it will be hereafter shown that there is a form of bronchitis so resembling tubercular disease of the lung, as readily to be mistaken for it.

When bronchitis has been long in a chronic state, and even where all the symptoms of the disease remain active, the bronchial mucous membrane is occasionally seen perfectly pale and colourless throughout. (Case 12.)

CDEMA.

Hydrops pulmonum. Dropsy of the lungs.—This is an effusion of serum into the interstitial cellular tissue of the lungs: the latter, when examined after death, may be pitted with pressure like the surface of the body in anasarca; they are much heavier than natural; and on being cut and

* “In this disease (Bronchitis) the whole of the Bronchial system seems to acquire the power of secreting matter.” *Badham on Bronchitis* p. 157. The original discovery of this fact in pathology, is variously attributed to *Morgagni, De Haen* and *Dr. W. Hunter*.

compressed, discharge a frothy, yellowish serum, after which they become again crepitant.

Although the air-cells are unimpaired, an œdematosus lung generally contains very little blood. The disease is mostly symptomatic of other affections, and is often conjoined with Phthisis.

EMPHYSEMA.

Emphysema pulmonum. Pulmonary emphysema.—This is for the most part, constituted by a distension of the air-cells in chronic catarrh, &c. The vesicles not unfrequently observed on the surface of the lung beneath the pleura, are caused by the escape of air from the cells within; the difficulty, however, of pressing the air back into the bronchia, led Dr. Bailey erroneously to suggest that it was secreted by the minute blood-vessels.* When an emphysematous lung is exposed on opening the chest, it does not collapse, but appears rather to expand beyond its natural dimensions.

When the disease is confined to the air-cells, as usually happens, it is called *Vesicular Emphysema*; but when it pervades the cellular tissue, separating the lobules, it is called *Interlobular*.

PNEUMOTHORAX.

The distension of the cavity of the pleura by air may originate variously, but in most instances is consequent to the absorption of the serum effused in pleurisy. The long continuance of such effusion presses the lung towards

* *Morbid Anatomy*, p. 47.

its root until permanent atrophy is established: if absorption is subsequently effected, the lung does not regain its bulk, and the serum is replaced by air. (*Case 17.*) In other instances the pleura is thus invaded from the bronchia, in consequence of ulceration. This affection appears also to be sometimes idiopathic.

HYDROTHORAX.

Dropsy of the Chest.—This name is given to idiopathic dropsy of the pleura, and must be cautiously distinguished from effusion from pleurisy, or from perforation consequent to an ulcer in the lungs.

The effusion in hydrothorax is limpid and without flocculi; and the lung, pressed upon by this fluid, is collapsed towards the spine, and has its functions either wholly or partially suspended.

MELANOSIS.

Melanosis is the name given by Laennec to masses of a black, or blackish-brown colour, occasionally found in the lungs, especially in tuberculous persons. This matter, according to the later views in pathology, is an excess of secretion of the pigmentum nigrum, modified no doubt by disease; in fact, it seems to bear much the same relation to the pigmentum nigrum that tuberculous matter does to the healthy albuminous secretions of the pulmonary tissue. Melanosis is mostly seen in amorphous masses, or irregular laminae, as represented Pl. III. fig. 2, or in black spots in the cellular tissue immediately beneath the pleura. (Pl. XI. fig. 1.) It is sometimes

encysted, and looks then not unlike a bronchial gland.* Pathologists also speak of this secretion in the fluid form, a modification I have not witnessed. Melanosis is essentially composed of the colouring particles of the blood united with fibrine, (both of them in a particular state) three kinds of fatty matter, and a considerable quantity of phosphate of lime and iron. I am disposed to think that melanosis is less frequent in this country than in Europe. In the Parisian hospitals, Bayle met with it in about a twelfth part of his autopsies.

CALCAREOUS CONCRETIONS.

These substances are frequently observed in the lungs and bronchial glands. They are mostly encysted, (Pl. III. fig. 2,) and give a gritty sensation in the fingers. Their consistence, however, is much varied, and they appear to be an intermediate link between tubercles and bony concretions. Analysis shows them to consist of ninety-six parts in the one hundred of saline substances, the remainder being animal matter. M. Andral considers them tubercles that have undergone an earthy transformation, an opinion that requires further proof.

OSSEOUS CONCRETIONS.

Bony masses are frequently secreted by the arteries in the lungs and their appendages: in the former they are mostly rounded, and enclosed in a cyst; in other instances they have a rough surface, by which they are firmly attach-

* See Carswell, on the Elementary Forms of Disease, &c.

ed. In the bronchia, they are branched in the direction of the air-tubes. In the glands they are often grouped.

DISEASED BRONCHIAL GLANDS.

These bodies are particularly subject to hypertrophy: when cut their substance is pulpy, traversed by white lines. They often contain tubercles, and calcareous and osseous concretions, (Pl. XII. fig. 2.) Again, they are occasionally softened, wholly or partially, into a yellowish, cheese-like substance.

Various other pathological conditions of the thoracic viscera, will be incidentally noticed in the course of the following pages.

CHAPTER II.

ANATOMY OF TUBERCULAR MATTER.

TUBERCULOUS matter presents itself in two very different forms, one of which is concrete, the other gelatinous: both of these varieties assume several different appearances.

MILIARY TUBERCLES.*

These are granules mostly of a yellowish or greenish gray colour, sometimes diaphanous, sometimes opaque, varying in size, under ordinary circumstances, from a fig-seed to a cherry-stone. They are either isolated or grouped, in the latter instance forming considerable masses; but if these be examined in their incipient state by reflected light, or with a glass, they are found to consist of an aggregation of the granules above mentioned.

These bodies are found on inspection to be extremely irregular in size and form; hence, also, in a state of aggregation, the masses may be rounded, ovoidal, angular, stellated, &c. (Pl. I. II. III.)

Tubercles of this kind are sometimes in masses of a deep brownish-red colour, interspersed in others of a yellowish tint, giving the lung a marbled or mottled appearance. (Pl. I. fig. 2.)

* *Grandines* of the older writers.

It is obvious that pulmonary tubercles derive their gray colour from the pigmentum nigrum, as Laennec has supposed; whence they are often of a much darker tint in advanced life, as seen in those that surround the encysted abscess, Pl. V. fig. 1.

When vast numbers of miliary tubercles reach the periphery of the lung, their rounded surface causes a partial displacement of the pleura; so that on removing the latter, the lung appears as if covered with a pustular eruption. (Pl. II. fig. 1.)

CRUDE TUBERCLE.

This is called the second stage of tubercular matter, and certainly it is so in reference to the diaphanous variety, in which the transformation commences by one or more opaque points, and ultimately involves the whole mass. When the change is complete, the tubercular substance has a yellowish white tint, a texture approaching cartilage, but more humid and less compact,* and when cut into it is smooth and polished. (Pl. II. fig. 3.)

It is certain, however, that tubercles often make their appearance in the opaque form, rendering the crude transformation, or rather the first stage of the suppurative process, much less obvious. (Pl. I. fig. 2.)

GRAY INFILTRATION.

Matiere grise demi-transparente. (Louis.)—It is common to observe masses more or less considerable, of a light gray, translucent appearance, smooth, moist and

* Laennec, L'Ausc. Med. t. i. p. 22.

shining when incised, and seemingly dense, but breaking readily under the fingers. No trace of air-vesicles remains: here and there are seen opaque spots of various shades of white and yellow, marking the progressive transition into the suppurative stage. Sometimes the crude transformation simultaneously pervades the whole mass. So also vomicæ form in various places, even while the surrounding portions still retain their original morbid characters. (Pl. III. fig. 1.)

This variety, like the following one, manifestly results from an abundant secretion of tuberculous matter through a large portion of parenchyma at the same time: masses very similar in appearance, however, result from the slower process of miliary accretions, especially when the latter assuming an angular form, coalesce into a uniform mass, as may be inferred from Pl. II. fig. 2.

GELATINOID INFILTRATION.

This substance is in some instances harder, in others softer, than jelly. Its other physical characters vary greatly, it being sometimes semi-transparent and rose-coloured, but more commonly colourless, or grayish, or of an olive tint. It fills the interstices between common tubercles, or pervades the parenchyma in a homogeneous manner. In the latter state it often, when first secreted, resembles a mucilage, or more strictly the white of an egg, and has all the appearance of a nearly pure albumen, which it undoubtedly is. Although Laennec has given the name of *colloid matter* to this last variety, I am disposed to consider it a form of tubercular disease,

and of course subject to the same transmutations. (Pl. III. fig. 3.)

Thus I conceive that the hypothesis of Meckel and Cruveilhier, which supposes tubercular matter to be primarily secreted in the fluid state, is not unfrequently realised.

The two subjoined cases afford some interesting facts in relation to this subject.

CASE I.

Phthisis with gelatinoid infiltration, and interspersed military tubercles.—J. L., a weaver, aged forty-one years, black hair, dark complexion, and much emaciated, had been confined in the lower cells of the Alms-house hospital for about three years, on account of lunacy. On the 3d of February, 1833, this man was removed to the medical ward with a troublesome cough, and extreme dyspnœa. He was immediately cupped over the chest, and blistered in the evening, but died the same night.

Autopsy, assisted by Dr. Mason, thirty-six hours after death.

Thorax. Right lung free, but contained some tubercles towards the apex.

Left lung totally disorganised and adherent to the pleura costalis; its superior lobe was solidified by gray and gelatinoid infiltration; the latter being distinct from the former, of a pale violet colour, and diaphanous: interspersed through it were great numbers of opaque yellow points, the size and colour of fig-seeds, which were obviously the radicles of transformation into crude tubercular matter. The surrounding gray infiltration had already attained this change, portions of it having begun to suppurate.

The remainder of the lung was occupied by a series of large cavities, communicating freely even to the diaphragm, and crossed in every direction by cords of condensed pulmonary tissue.

Bronchial glands enlarged.

Mucous membrane highly inflamed.

Heart firm, smaller than natural.

Liver not obviously diseased.

Other organs not examined.

Remarks.—The gelatinoid infiltration is an example of tubercular matter secreted in the semi-fluid form: it is evidently a rapid secretion, and appears in some instances to be converted into crude tubercle by a process almost equally rapid, until the lung becomes a dense, and seemingly inorganic mass, without a trace of respiratory structure. The following is a striking example:

CASE II.

A. W., a mulatto female, aged thirty, was admitted into the Alms-house hospital towards the close of 1831 with a violent catarrh, and was a few weeks thereafter discharged cured. She was re-admitted in December, 1832, with a troublesome cough, severe pain in the right side of the chest, and profuse night-sweats: these appearances were successively followed by purulent expectoration, dyspnœa, œdema of the feet, and occasional hæmoptysis. Her appetite was good, but her person emaciated and languid. The stethoscope detected cavities in the right lung, from its apex to its base; the gurgling of fluid in these cavities was so strikingly distinct, that I repeatedly called the attention of the clinical class to it. This woman lingered until April 20, 1833, when she died.

Autopsy, assisted by Drs. Simpson, Allen and Postell, seventeen hours after death. Body extremely emaciated.

Thorax. *Right lung* firmly adherent posteriorly; the superior lobe contained a large funicular abscess, the cords still slightly pervious, and obviously the remains of blood-vessels: this cavity communicated with others to the base of the lung; the entire lung around the cavities was infiltrated and solidified, the tuberculous matter being of various shades of rose or violet, gray and yellow—the latter colour forming the parietes of the cavities for a line or more in thickness, and pervading the mass in irregular spots and lines. This yellow matter was obviously the crude transformation of the violet or rose-coloured portion, which appeared to have originally infiltrated the entire superior lobe. The violet mass was diaphanous, in some places shaded with gray, and contained disseminated specks of black pulmonary matter. (Pl. VII.)

Left Lung. Upper lobe tuberculous, cavernous, adherent: inferior lobe healthy.

Bronchial glands tumefied.

Bronchial mucous membrane inflamed.

Heart and liver natural.

Other organs not examined.

Remarks.—The preceding cases appear to afford satisfactory evidence as to the nature of gelatinous infiltration, and its eventual conversion into crude tubercular matter, as M. Laennec has shown: its existence moreover proves a strong tubercular diathesis, and a rapid tubercular secretion. In fact, I have seen it in one instance so abundant, that I could only compare it to an albuminous œdema.

ENCYSTED TUBERCLE.

In a true encysted tubercle, the fibrous or cartilaginous envelope is visible before the softening of the contained mass, and appears to have a contemporaneous origin with the tubercle itself. This extremely rare coincidence, of which I believe Dr. Louis mentions but a solitary example, has presented itself several times in my dissections, and once in a remarkable manner.

CASE III.

Enormous Encysted Tuberclle, &c.—W. N., a black labourer, aged twenty-six years, with a rounded, full face, but meagre person, was brought into the Alms-house hospital, June 29th 1833, in a state of partial stupefaction, but complaining of pain in both sides of the chest, and insufferable languor, which prevented the use of the stethoscope. I could only learn from him, that this pain seized him three weeks previous, and was followed by cough and difficult breathing. He continued with these symptoms for about two weeks, when diarrhoea supervened and carried him off in a few hours.

Autopsy, assisted by Dr. Postell, five hours after death. Great emaciation.

Thorax. *Right lung* firmly adherent above; the two upper lobes were loaded with tubercular matter in large masses, and mostly in the crude state: that in the superior lobe formed an ovoidal mass the size of a goose-egg, and was surrounded by a distinct, white, cartilaginous cyst, about a line in thickness: the cyst touched the pleura laterally, but was easily separable from it, the pleura itself being much thickened and adherent at these places. The thin edge of the lung towards the mediastinum, was filled with tubercles, but the cyst formed a perfectly distinct boundary between them and its own contained mass, which was of a grayish yellow colour, opaque, and mottled with darker points: its upper and posterior portions had already begun to suppurate, there being a number of small vomicæ that communicated freely with each other. (Pl. III. fig. 1.)

Left lung. Superior lobe adherent, tuberculous; and a small cavity beneath the apex, filled with cream-coloured pus.

Bronchial mucous membrane slightly inflamed.

Bronchial glands enlarged, ash coloured and distinctly tuberculous.

Heart natural.

Pericardium full of serum.

Other organs not examined.

Remarks.—The contents of the above cyst were closely allied to medullary sarcoma, yet possessed the distinctive characters of tubercle. I am at a loss to account for such a cyst, nor have I met with any satisfactory explanation of the phenomenon. It is not unfrequent to observe calcareous concretions contained in firm sacs; but, in such cases, the small proportion of animal matter they contained having been evacuated into the bronchia, the earthy mass remains, and irritates and inflames the surrounding cellular tissue until a firm cyst is formed. A concretion and cyst of this description are represented, Pl. III. fig. 2.

Dr. Carswell* supposes that tubercular cysts are merely

* Illustrations of the Elementary Forms of Disease, Part. I.

the distended parietes of the air-cells, an opinion in which I cannot coincide.

In the instance of a young man who died under my care, there were four or five encysted tubercles in the right lung, the envelopes being thick, firm and black, and the tubercular matter so firmly attached to their internal surface as to require considerable force to separate them.

TUBERCULOID GRANULATIONS.

Granulations miliaires. (Bayle.)—Bayle described these substances as different from tubercles, and I believe his distinction to be founded in truth. They are transparent or diaphanous, shining when cut, cartilaginous in their texture, mostly rounded or ovoid, and seldom larger than a grain of millet. When cut into, each one appears to be contained in a distinct sac, from which it may often be readily separated by a slight incision with the scalpel. Laennec and Louis consider them the first stage of tubercles; Broussais supposes them to be diseased lymphatic glands; while Andral ingeniously attributes them to the air vesicles of the lungs, dilated and filled up in consequence of inflammation. Of the truth of this last proposition I have little doubt, especially since Dr. Horner's beautiful preparations of the air-vesicles have removed all ambiguity in reference to the size and form of the latter cavities, and their mode of intercommunication.*

I have examined several persons after death whose

* American Journal of Medical Sciences, February, 1832. Dr. Horner proves the air-cells to be about one-twelfth part of a line in diameter, and of a spherical shape; the cells of each lobule communicating freely, like the cells of a fine sponge, by lateral apertures.

lungs contained these granulations only, without any admixture of tubercles; and I am inclined to believe that they hold the same relation to the gray induration of pneumonia, that tubercles bear to tubercular infiltration: and if they should be subjected to analysis (which I am not aware has ever been directed to these bodies in particular,) they will probably prove to be composed of fibrine, and not, like tubercles, of albuminous matter.

Disposition of the Cellular Tissue, &c.—This is certainly the least destructible of all the tissues; integuments, muscles, bones, rapidly disappear, but the cellular membrane that connected them together, often remains when they have left no trace. (*Case 24.*) It retains its organisation when all surrounding parts are disorganised, and though infinitely separated into laminæ, still preserves an interstitial circulation peculiar to itself.* It is thus disposed in tubercular disease of the lungs: each tubercular molecule, though in itself inorganic, is embraced by an

* “From the result of microscopical observations, little doubt rests on my mind, that a large proportion of what is regarded as capillary circulation, is not in fact performed by vessels. On the contrary, the blood circulates out of vessels, but in currents which are established in the globules and interstices, of which the ultimate structure consists. While examining the circulation in diaphanous tissues, we have the ocular demonstration of this fact. The currents of globules flow in every direction; I have seen currents of globules commence where none existed; and by the application of a mechanical irritant, I have seen the whole tissue become a mass of moving globules, pursuing every course with every diversity in their velocity. Dutrochet, speaking of the circulation of the salamander, mentions that he has seen the globules suddenly strike off laterally into the surrounding structure. He could not account for the manner in which they could escape from the vessels, though he declares he has observed the fact too often to permit a doubt as to its existence. There is no question that the observation is correct, and it is an additional evidence that the blood is not confined in closed vessels or tubes.”—*JACKSON, Prin. of Med.* p. 23.

areola of cellular membrane, receives from the latter a kind of parasitic vitality, and is dependent on it for the whole series of changes from the miliary granule to open abscess. I have repeatedly detected the cellular tissue of tubercular masses, by placing them in alcohol when in a state of incipient suppuration; the spirit partially dissolves the softened tubercle, denuding, at the same time, the cellular areolæ, which present a reticulated, filamentous, and of course vascular structure, subdividing the tubercle by innumerable septa.

It seems probable that even the capillary vessels of this tissue are obliterated very early in the disease; for, as will be explained hereafter, the visible arterial and venous trunks of which they are the fountains, or sources, lose their function long before their final absorption. Perhaps the only appreciable circulation of tubercular masses, therefore, exists independently of capillary tubes, or in other words, is strictly parenchymatous.

The yellow colour of tubercles in jaundice, is obviously owing to the admixture of bile with the white blood; both being simultaneously circulated through the cellular tissue of the tuberculous mass. (*Case 25.*)

ABSCESSES.

We have seen that sooner or later tubercular matter assumes the crude state, which is the precursor of suppuration. This change usually commences in the centre of spheroidal masses, but irregularly in those of an irregular form: I have occasionally met with tubercles of a round or ovoidal form, that have begun to soften at or

near their periphery. (Pl. II. fig. 3.) When the latter change commences in large masses by many simultaneous openings, enormous cavities are formed, having all the characters of abscesses in other parts, with certain peculiarities derived from the structure of the lungs. In other instances the abscesses are small, numerous or few, presenting a great diversity of physical characters.

1. *Simple Abscess.* In the first stage of this variety, its parietes are formed by the pulmonary tissue, rough and granular, of a mixed reddish and yellow colour; but in a very short time, the cavity becomes lined by a vascular livid membrane, smooth and polished in some places, and irregular and granulated in others.

This membranous secretion, which is in some instances deciduous,* is obviously the origin of the following more striking arrangement.

2. *Encysted Abscess.*—When phthisis is of long duration, and of slow development, the membranous parietes of the abscesses attain a firmness almost cartilaginous, and a thickness varying from half a line to more than an eighth of an inch. (Pl. V. fig. 1 and 2, and Pl. IX.) Such a cyst is mostly diaphanous, firmly attached to the lung externally, while its internal surface presents various inequalities, of a corrugated or granulated nature. These granulations are mostly yellowish, sometimes red, and even of a bright blood tint. (Pl. V. fig. 2.) I believe them to have in some instances an active share in hæmoptysis. (*Case 12.*) Encysted abscesses are of frequent occurrence in chronic phthisis, and sometimes attain a great size.

* Dr. Heberden mentions a patient who appeared to have coughed up one of these cysts, and subsequently lived to a good old age.—*Comment.* p. 306.

3. *Funicular Abscess*.—In this variety the cavity is traversed by cords, formed of condensed pulmonary structure, or of blood-vessels, or of both conjoined. They are of variable dimensions, from a line to nearly an inch in diameter, and mostly flattened. It was long ago suggested by Bayle, that the rudiments or nuclei of these cords are invariably derived from the blood-vessels; and my own observations have satisfied me, that this is often, though probably not always the case, as will be hereafter shown.*

Contents of Abscesses.—The cavities thus formed by the simultaneous or consecutive softening of several tubercular masses, are almost as variable in their contents as in their size and form. The contained matters consist of different grades of softened tubercles, and of pus—the latter being a more matured condition of the former.

The softened tubercular matter of abscesses is opaque, of a caseous consistence and yellowish colour: it at first more or less completely fills the cavities, and is evacuated, as the disease advances, by one or more bronchial tubes, which, leading from the abscess, have their lining membranes continuous with it. The matter of abscesses is sometimes hard, dry, deposited in successive layers of considerable thickness, and peels off like the coats of an onion.

We often find small abscesses completely filled with this semi-fluid, caseous matter; but after they have been once emptied, it is observed chiefly in irregular masses on their parietes, while the function of the cavity mainly con-

* See *Disposition of the Blood-Vessels* at the end of this chapter.

sists in the elaboration of a fluid which has all the characters of pus.*

This purulent matter varies in its colour and consistency, in the same way as in abscesses in other parts of the body; sometimes being straw-coloured, thick, inodorous and viscid; again thin and serous, sanguineous, ichorous, fetid, &c.

This secretion escapes from the cavity by one or more fistulous ducts, the remains of bronchial tubes, through which it is transmitted to the trachea and thence expectorated. But it occasionally happens, that when suppuration occurs in the midst of extensive tubercular masses in which no bronchial tubes remain, the abscess may continue for a length of time imperforate: finally, however, it meets with a bronchial ramification, and I have known the egress of pus to be so great and so sudden, as at once to strangle the patient.

Physicians, since the time of Hippocrates, had given the name of *vomica* to abscesses of the lungs consequent to pneumonia: Laennec, however, from the supposed infrequency of phlegmonous abscesses in those organs, restricts the appellation to the cavities formed by the softening of tubercles.

Tissues in which tubercles are developed, &c.—Tubercles are developed in all the tissues of the body, except those of a horny consistence; but they are particularly frequent in the lungs: they are also common in the lymphatic glands,

* *Pus* is composed of yellowish albuminous globules, floating in a fluid resembling serum, and having the same shape as the red globules of the blood; it has been seen in every tissue, and even in the blood itself.—ANDRAL, *Anat. Path.*

especially those of the mesentery, and in the mucous and serous membranes; they also occur, though more rarely, in the liver, spleen, testicles, kidneys, brain and muscles.*

Laennec and Lombard (I quote the latter from Andral) have remarked tubercular disease most frequently in the right lung; which, however, is at variance with the observations of most other pathologists; for Bonetus, Morgagni, Stark and Louis, have arrived at the opposite conclusion, which also accords with my own experience, as the following analysis of 119 cases will show:

Right lung most diseased in	- - - - -	43 cases
Left lung	- - - - -	67 "
Both lungs about equally diseased in	- - - -	9 "

Of the preceding number, the disease was confined to the left lung in five cases, and to the right lung in a single instance only.

Analysis.—M. Thenard has obtained the following results from 100 grains of unsoftened tubercular matter.

Albuminous animal matter,	98.15
Muriate of soda,	
Phosphate of lime	1.85
Carbonate of lime	
Oxide of iron a trace.	
	100.00

* Meckel. Manuel d'Anatomie, Chap. XII.

CHAPTER III.

PATHOLOGY OF PHTHISIS.

No fact is more familiar to pathologists, than that the apex of the lung is much more prone to tubercular disease than any other part: thus it often happens that while the apex of one or both lungs is filled with tubercles, or dense with infiltration, or even in a state of open abscess, the inferior portions are entirely free from disease. So uniform is this rule, that probably nothing but an accidental cause ever develops tubercular disease primarily in the inferior lobes. Louis met with but two exceptions in one hundred and twenty-three cases; and two have occurred in my own practice. (*Case 29.*)

This fact has been variously accounted for; but I conceive that its real explanation is to be sought in the confinement, and consequent compression of the superior lobes, from the conformation of the cavities that receive them. These conical cavities are chiefly formed by the first rib and the spine; the former is broad, flat, and inclined to an angle of about forty-five degrees, having its anterior margin on a line with the lower part of the third dorsal vertebra, while its head is attached to the first. Thus placed, the upper rib dilates least of all, and may, in fact, be considered a fixed point: * the inferior ribs, on the

* Horner, Spec. Anat. &c. Vol. I. p. 103.—I am aware that on this point there is a variety of opinions: Haller and Bichat believed the first rib to be

contrary, possess successively an increased power of expansion, while the capacity of the thorax in that direction is greatly augmented by the diaphragm.

The confinement and compression to which the superior lobe is thus subjected, render it peculiarly liable to sanguineous congestion; which, by perverting the organic functions of the lung, may be considered as the exciting cause of tubercular disease; a doctrine not advanced as a novelty, but adopted for its practical value.*

This congestion, then, is the morbid condition which immediately precedes the formation of tubercles, and is essentially analogous to that which accompanies every secretory process: differing, however, in degree, and in the suddenness of accession.

Physiology shows us, that in the healthy living body there is a constant secretion from the blood of an albuminous halitus, which is deposited in every part of the system, and in no structure so abundantly as the cellular tissue.

Whatever deranges this interstitial secretion, tends to the production of preternatural substances; hence any irritation may induce them; not that it necessarily increases the activity of the secretory process (which in health is amazingly prolific,) but because it perverts this important function.†

fixed by the Scaleni muscles: while, on the other hand, Magendie and Bouvier suppose it to have more motion than any other.

* "Causa proprior est, specialis congestio sanguinis ad pectus." Stahlii Op. Med. fol. xxxiv.

† ANDRAL, *Anat. Path.*—See also the elaborate work of Meckel, Manuel d'Anatomie, Chap. xii. wherein this idea is explained with great ingenuity: "Toutes, les alterations de texture" he observes, "proviennent d'une sub-

Such appears to have been the opinion of the indefatigable Baumes, who, in his work read before the Medical Society at Paris, in 1783, holds the following language: "An organ that has become enfeebled, secretes its peculiar fluid in an imperfect manner; these fluids no longer possess the degree of vitality necessary to stimulate and support the solids; they become from day to day more unnatural, until at length they cease to have any analogy with the healthy structure."^{*}

One of the results of this morbid secretion, is a vitiated form of albuminous matter which has received the name of tubercle: we have seen that it consists almost wholly of albumen, proving its affinity, in this respect, to the healthy interstitial secretion, from which it differs mainly in certain physical characters already described.

The reason why the tubercular secretion is so much more frequent and abundant in the lungs, than in other parts of the body, is, that they are formed of a most delicate series of tissues, which are pre-eminently exposed to the many vicissitudes arising from atmospheric changes, inordinate physical exertion, and direct mechanical irritation.

Tubercular disease is by many considered to be invariably the product of inflammation;[†] but although the latter

stance albumineuse, que très probablement est toujours fluide au moment où elle s'épanche."

* "Les organes affaiblis élaborent toujours moins parfaitement les sucs destinés à les réparer; les liqueurs ne peuvent plus atteindre au degré de vie nécessaire pour entretenir et solliciter l'action des solides: elles s'en éloignent tous les jours d'avantages, et deviennent enfin étrangères, en quelque façon, à la nature, pour qui elles ne sont plus qu'une espèce de surcharge." Baumes, *De la Phthisie pulmonaire*. Tome 1. p. 135.

† "The Pneumony appears to be an acute consumption, and the consumption

frequently accompanies it, and always in its second stage, it does not appear to be essential to its secretion, any more than to the deposit of osseous particles in the coats of an artery, or in the substance of a cartilage; for pneumonia usually attacks those parts of the lungs least susceptible of phthisis, *viz.* their inferior lobes.

Tubercles are often found in great numbers in the lungs after death, without their having been ever suspected during life; and if these tubercles have not passed to the crude state, the parenchyma around them is often perfectly healthy, presenting, in fact, no trace of pneumonia. Could the pulmonary tissue maintain this integrity, if each tubercle was a centre of inflammatory action? Inflammation appears, therefore, as a general rule, to be rather a consequence than a cause of tubercles; the latter forming independently of it, and subsequently inducing phlogosis like any other extraneous bodies.* Thus it is that tubercles induce pneumonia, while, on the other hand, pneumonia is a cause of tubercles, as will be explained hereafter; for it would be inconsistent with analogy, as well as with fact, to restrict this secretory process to an inflammatory state of the vessels, and *vice versa*. This exclusive doctrine (to which at one time I was strongly biassed) has given rise, among pathologists, to those conflicting views which can only be reconciled by a concession like that here admitted, and which is founded on the known phenomena of diseased action.

a chronic pneumony. From the analogy of the pulmonary consumption with the diminutive term of certain fevers, I have taken the liberty of calling it a *Pneumonicula*." Rush, Inq. and Obs. Vol. 2. p. 88.

* Bayle, Laennec, Louis, &c.

Tubercle, as shown by Andral, grows by the successive deposit of molecules around the primary granule, until the mass may occupy an entire lobe of the lung. What seems to me to invalidate Laennec's hypothesis of growth by intus-susception, is the fact, that the black pulmonary matter is sometimes seen penetrating the body of a tubercle, in such manner that the latter has obviously surrounded the melanotic mass by the process of accretion, (Pl. II. fig. 3.) Yet as we frequently observe melanotic spots in tubercles, (Pl. III. fig. 1,) we must either suppose that it preceded the formation of tubercles, or that their morbid cellular tissue has the faculty of secreting this substance.

It has been already mentioned that each tubercular granule is enveloped by its appropriate tunic of cellular tissue, which at some period of phthisis takes on inflammation, and secretes pus. By this process the tuberculous mass is completely disintegrated and softened, and mixing with the purulent matter, gives it often a cheese-like, or curdy consistence.* After a tubercle has thus become softened and removed by the interstitial secretion of pus, the cellular tissue that formed its tunic now forms the parietes of the abscess, and secretes a part of the pus that is expectorated at subsequent periods of phthisis. If the tuberculous mass has been circumscribed, and the inflammation of this cellular envelope protracted, the latter assumes a considerable thickness, varying, however, from a most delicate web to more than a line in thickness, and forms what is termed a cyst. These cysts, as we have previously ob-

* Lombard. Andral.

served, often completely isolate an abscess, leaving the surrounding pulmonary structure in a state to perform the respiratory function. (Pl. V. fig. 1.)

The manner in which the blood-vessels are destroyed in tuberculous disease, has never, that I am aware, been satisfactorily explained. The result of many observations directed to this point, leads me to the following conclusions: the blood-vessels of the cellular tissue constituting the outer coat of the artery, secrete their own tuberculous matter, which preserves the form of the vessel until suppuration takes place. The middle coat of the vessel meanwhile preserves its red colour; but between it and the internal coat a second layer of tubercular matter is observed, doubtless arising from a lamina of cellular tissue connecting those coats together. The inner coat, however, does not appear to change during the whole process of tubercular disease, but retains its pearly, diaphanous, and polished character. In order to trace this pathological condition of the blood-vessels, it is necessary to examine such of them as traverse a large tuberculous mass, after it has become softened, but anterior to perfect suppuration: if the vessels then be separated by cautious percolation with water, and a trunk be cut across, the several facts above mentioned will be rendered obvious. If, however, the examination be not made until after complete suppuration has taken place, the external cellular tunic of the artery will be found to have granules or masses of tuberculous matter adherent to it, not derived from the contents of the abscess, but from its own proper tissue: the portions intermediate between these granules

are of a florid red colour, and appertain to the denuded middle coat of the artery, the interstitial cellular membrane of which of course undergoes the same process. This tuberculous degeneration of the blood-vessels is obviously derived from the *vasa vasorum* themselves, and may be in some degree conceived of by the illustrations on plates VI and VII.

The theory of the *lymphatic origin* of tubercles, which is now so generally received, is at least as old as Sylvius,* who supposed the lungs to contain an infinite number of minute conglobate glands, analogous to those of the mesentery; and that the inflammation and suppuration of these glands causes the vomicæ of phthisis. This opinion, which has been adopted by many physicians since the time of Sylvius, has more recently been amplified and illustrated with great ingenuity by M. Broussais. This pathologist attributes tubercular disease to an inflammation of the lymphatic glands and vessels, consequent to inflammation of the sanguiferous capillaries. "When inflammation," says he, "is developed in lymphatic glands, and passes to the chronic state, they become grayish, whitish, and sometimes semi-transparent, and have received the name of tubercles. If the irritation continues, it produces, in place of the pus of phlegmons, or the albuminous exudation of membranes, a white, concrete, inodorous matter, of the consistence of cheese. Whilst the lymphatic glands are thus slowly disorganised, the irrita-

* Sylvius wrote in 1671. I have not been able to procure his work, and quote his opinions from Dr. Young's learned Treatise on Consumptive Diseases, p. 178.

tion that destroys them is communicated to the surrounding cellular tissue, developing there vast numbers of tubercles, which probably result from the disorganisation of the principal fasciculi of lymphatic capillaries." "This kind of degeneration occurs in all parts, especially in those designed for copious secretion, because they abound in lymphatics; and it presumes that the sanguine capillaries are but little irritated."*

In the language of Dr. Duncan, "each tubercle may be considered as a lymphatic gland in a particularly diseased state; that this diseased condition is the consequence of scrofula; and that the tuberculous phthisis may in every instance be considered a scrofula affecting the lungs."†

This hypothesis has long been the subject of voluminous discussion among pathologists: I have neither time nor inclination for a review of it in this place, and will merely suggest the following considerations:

If tubercles originate solely in lymphatic glands and vessels, ought we not more frequently to meet with them where these structures are most abundantly distributed, as in the axilla, and groin, the mesentery, neck, &c.? Yet, it often happens that in persons dead of phthisis, we see the bronchial, axillary and inguinal glands greatly tumefied, without being at all tuberculous; and we find the same hypertrophy of the bronchial glands in those diseases of the lungs in which tubercles have no part. Again, I have many times examined the bodies of children who

* Phleg. Chron. t. i. p. 28, &c. "La matière tuberculeuse," says Goupil, "est le produit de l'exhalation des vaisseaux lymphatiques irritées; elle peut donc être déposée partout où ces derniers existent."—*Nouv. Doct. Med.* p. 48.

† *On Consumption*, p. 23.

have died of diseased and monstrously enlarged mesenteric glands, whose lungs were perfectly free from tubercles, and in every respect healthy.*

The lymphatic origin of tubercles presupposes the existence of innumerable minute glands in the lungs; but anatomy, even aided by the microscope, has never detected them: moreover, a true tubercle has not, in any stage, the anatomical characters of a gland, for it is closely attached to the surrounding parenchyma; whereas all glands, especially when enlarged by disease, possess their proper capsules, which enable them to be dissected out with facility.

With respect to the *hydatid* origin of tubercles, as maintained by the ingenious Dr. Baron, I confess myself unconvinced by his facts and arguments; but in the present infant state of pathology, it is more easy to doubt this hypothesis than to disprove it. A tubercle, according to Dr. Baron, is not merely the domicile of a hydatid, but the hydatid itself. This opinion has lately met with some able advocates, and especially M. Kuhn, a German pathologist.

The pathology of tuberculous disease may, I think, be summed up in the following propositions:

1. Tuberculous matter is a secretion from the blood-vessels.
2. This secretion is a morbid condition of the albuminous halitus proper to the tissues forming the parenchyma of organs.

* M. Louis, in three hundred and fifty post mortem examinations, found but a solitary instance in which tubercles existed in the other organs without there being any in the lungs.

3. The cellular tissue of these organs is the principal nidus of tubercle.

4. Inflammation is not necessary to its development; it may be either a cause or a consequence.

5. The cellular tissue which envelopes and intersects tubercles, sooner or later takes on inflammation, and secretes pus; by which process the tubercular matter is eliminated, and an abscess is formed.

6. The morbid state immediately antecedent to the tubercular secretion, and which may be considered as its exciting cause, is a sanguineous congestion.

I am aware that Dr. Carswell considers the *mucous membrane* to be the most usual seat of tubercular disease.

“In whatever organ the formation of tuberculous matter takes place,” says he, “the *mucous* system, if constituting a part of that organ, is in general either the exclusive seat of this morbid product, or is far more extensively affected with it than any of the other systems or tissues of the same organ.”* I cannot coincide in opinion with this eminent pathologist: on the contrary, most of the examples which I at first glance referred to the mucous membrane, I believed, on closer inspection, to be contained in the subjacent cellular substance.

† Elementary Forms of Disease.

CHAPTER IV.

CAUSES OF CONSUMPTION.

EVERY observer, whether in the profession or out of it, has remarked that some persons are more predisposed than others to certain diseases, and that such predisposition will characterise a whole family, and descend from one generation to another. When we see that features, expression and complexion, even the qualities of the mind, are all so unequivocally transmitted from the parent to the child, we realize in externals what is equally true of the internal organisation.*

I do not mean by a hereditary malady, that the child of a diseased parent necessarily receives from the latter the disease itself; but that by possessing, in common with the parent, certain peculiarities of constitution, it will be predisposed to the same maladies.

On the other hand, there are certain constitutions which appear to possess an absolute immunity from certain diseases: there are individuals in whom no excesses will generate gout: there are others in whom no cause will develope tubercles; and there are those again whose glandular system is insusceptible of scrofula.

* *Hujusmodi varietates non corporis modo, verum et animi quoque, plerumque congenitæ, nonnunquam hereditariæ observantur. Hoc modo parentes in prole reviviscent; certe parentibus liberi similes sunt, non vultum modo, et corporis formam, sed animi indolem, et virtutes, et vitia.*"—**GREGORY, *Cons. Med. Thor. ch. i. sec. 16.***

Consumption is a remarkable instance of hereditary disease. When parents have died of constitutional Phthisis, the children are almost sure to suffer; and examples are familiar to every physician, wherein no precautions that art could interpose were sufficient to prevent the accession of the disease.

Let us now inquire, what are the supposed physical characters of the tuberculous diathesis? From time immemorial they have been associated with the sanguineous temperament—a fair skin, light hair, blue eyes, thick lips, long neck, narrow chest, projecting shoulders, and meagre person; and yet even in this country, where fair features greatly predominate, my observations are so far from confirming this rule, that almost two-thirds of the phthisical patients who have come under my notice, have had dark hair, dark or sallow complexions, and dark eyes.* Of the remaining third, a considerable number had reddish hair, and what is called the sandy complexion. With respect to the conformation of the chest above mentioned, I have met with very many exceptions to this also. It seems, indeed, extremely difficult to detect the tuberculous constitution† by any physical characters of even general application; and still more difficult to identify it with the scrofulous diathesis.

In fact, this assumption of identity appears to be entirely gratuitous. I have twice seen scrofulous affections developed in the spine, even to personal deformity, and ac-

* Negroes are of course left out of the calculation: their predisposition to phthisis, however, is familiar to every American physician.

† *Tuberculous cachexy* of Dr. Clark.—*On Consumption*, p. 17.

companied by chronic pulmonary disease, without exciting a tubercle in either lung. (*Case 34.*) I am much gratified to be able in this place to record the affirmative opinion of the celebrated Dr. Rush. "I am aware," he observes, "that these tumours in the lungs have been ascribed to scrofula. But the frequent occurrence of consumptions in persons in whom no scrofulous taint existed, is sufficient to refute this opinion. I have frequently directed my inquiries after this disease in consumptive patients, and have met with very few cases which were produced by it."*

In the next place let us examine in detail the *causes* of phthisis.

BRONCHITIS, &c.

I agree with Broussais in considering chronic catarrh a frequent cause of tubercle; not, however, by the propagation of the inflammatory action from the mucous membrane to the parenchyma, (for bronchitis is remarkably independent of pneumonia,) but by the interruption it opposes to those profuse healthy secretions upon which the integrity of the lungs depends. That bronchitis is often a consequence of tubercles is equally obvious, the primary irritation originating in the latter.

A large proportion of consumptive patients are able to trace the first appearance of disease to some exposure to cold or wet, an incautious change of dress, &c., followed by a *cold* which was neglected until the symptoms became severe, complicated, and unmanageable. I think, with

* Med. Inq. and Obs. Vol. 2. p. 93.

Broussais, that if the catarrh appears to be accidental the tubercles cannot be accused of having produced it. Those who, with Laennec and others, deny the agency of bronchitis, appear to do so from the fear of admitting the propagation of inflammatory action from one tissue to the other—for which, as before observed, there is no necessity whatever. These gentlemen also cite the well known fact, that persons labouring with asthma often live to advanced life without suffering from tubercular disease; the asthmatic affection seeming, like gout, to take precedence of other maladies. But in these cases are we to infer that the tuberculous diathesis is absent? or simply that the two diseases are incompatible? This question has never been satisfactorily explained.

If bronchitis evolves phthisis, it generally does so with considerable celerity; and M. Broussais has justly observed, that repeated attacks of catarrhal inflammation are rather an indication of the absence, than a proof of the presence of tubercles.

The sources of mechanical irritation which are productive of bronchitis, are extremely varied; thus, men who work in flax-mills, those who inhale dust and mineral spiculae in the iron trades, and the dust of wood in polishing mahogany, weavers, workers in lime, charcoal, &c. become catarrhal by direct irritation of the bronchial membrane, and are proverbially subject to consumption.*

The agency of direct mechanical irritation in producing tubercles, has been unequivocally proved by Cruvelhier,

* See Thackara, Patissier, &c., *passim*.

who excited them in the lungs of dogs by merely injecting quicksilver into the trachea. The globules entered the vesicles of the lungs, giving rise to irritation, which resulted in the formation of tubercles.

It is also well ascertained that irritation which is primarily in the larynx, and even in the fauces, will in time elicit tubercles in persons predisposed to them. An interesting example occurred not long since, in the practice of my friend Dr. S. L. Howell, of Princeton, N. J., in which the irritation, after an obvious commencement in the larynx, was soon propagated to the lungs, and resulted in tubercles and extensive abscesses. A post mortem examination detected a bony concretion in the larynx, attached by a small surface, and projecting into the cavity to the size of a filbert.

Foreign substances which have accidentally become lodged in the larynx, have been known to evolve phthisis in like manner.

Unnatural elongation of the uvula tends to the same end, by exciting cough and irritation. A young gentleman who had for several months been harassed with a dry cough, and whose uvula was greatly elongated, applied to me for advice in 1830. His symptoms generally gave him the impression that he was consumptive; and he had travelled some hundreds of miles in the hope of regaining his health, but without that happy result. I removed his uvula, and the cough and other symptoms wholly disappeared. He died in August 1833, of inflammation of the bowels, and as his family requested an autopsy, I availed myself of the opportunity to examine his

lungs. The right lung, especially towards its apex, contained a great number of granulations, mostly in the diaphanous state, around which the parenchyma was healthy. The left lung contained a few of the same bodies.

Whether these bodies were genuine tubercles, or tubercloid granulations, I do not feel disposed at this time to be positive, owing to circumstances unfavourable to a critical examination;* but in either case they were obviously the result of the previous catarrh, which, had it continued, would no doubt have caused a progressive increase of the disease, and ended in a form of phthisis.

At the present time I have in my charge a young man with manifest tuberculous disease of the right lung, which has lasted upwards of a year. He lately called my attention to his uvula, as he was under the impression that it aggravated his cough. Although the organ was not remarkably large, I removed it; and with such immediate alleviation of his pulmonary symptoms, that we have both regretted that the operation was not performed at an earlier period.

May not catarrh, or rather its attendant cough, act mechanically in exciting tubercular disease? In other words, may not the frequent and violent compression of the lung, especially its apex, so far derange its organic functions as to cause congestion, and tuberculous secretion?

* In the former edition I have spoken of these substances without hesitation, as being tubercloid granulations. Yet as the body, when examined, lay in an ice-box, and the room was not well lighted, there may have been a fallacy in my observations. The practical inference is the same in either case.

PLEURISY.

My observations lead me to believe that affections of the pleura unattended by pneumonia, rarely excite tuberculous disease: for I have examined the bodies of many persons who have died in the various stages of pleurisy, without meeting with a single tubercle, or any trace of their previous existence: and in those consumptives in whom I have noticed the pleuritic affection, (and this is a very large proportion of the whole number) it has generally appeared to have been derived secondarily from the adjacent pulmonary disease.

It may be replied, that when chronic pleurisy does not excite tuberculous disease, it is because the tuberculous diathesis is wanting: but I lately met with a singular example to the contrary. A weaver, aged 39 years, consulted me for a pulmonary disease of long standing: on exposing his chest, I observed a striking deformity of the left side, increasing from above downwards, as if from a former pleurisy; and I had no doubt of finding, in that place, the seat of his existing disease. But, to my surprise, the lung on that side was resonant, and, so far as could be ascertained, healthy throughout; but on applying the stethoscope to the apex of the opposite lung, I there detected a very large abscess, surrounded by a morbid structure almost impermeable to air. The patient, informed me, that at a considerably antecedent time he had suffered much from a pleuritic affection, but that it had long since ceased to molest him.

Without altogether denying the agency of unmixed pleurisy, I cannot recall to mind a case in which it has *unequivocally*

callly induced tubercular consumption; nor do I think the examples cited by M. Broussais under the name of *Phthisis dependent on chronic pleurisy*, are satisfactory evidence on this head: the disease was probably pleuro-pneumonia, and not simple pleurisy; and with all deference to that learned physician, the inflammation, in some of his cases at least, appears to have been rather a consecutive than a primary affection.*

Consumption induced by pleurisy, has by some received the name of pleuritic phthisis—an appellation also assigned by systematic authors to those chronic, wasting pleurisies attended by effusion into the sac of the pleura.

PNEUMONIA.

INFLAMMATION of the lungs, by interrupting and depraving the secretions of those organs, may cause the tuberculous secretion: yet it is probable that acute pneumonia does not often exert this agency; because the inflammation, unless it assumes the chronic state, seldom leaves any organic alteration of the pulmonary tissue: for we have already seen that both engorgement and hepatisation are susceptible of complete resolution, leaving the air-cells and bronchial tubes unaltered. Yet I am free to acknowledge that I have met with a few instances, in which tubercles appeared to originate in acute pneumonia: of which the following is a striking example.

* Phleg. Chron. Obs. XLVI to LI, inclusive.

CASE IV.*

Acute Phthisis induced by Pneumonia.

Allison Stanton, a tall, athletic negro, aged 24 years, was admitted to the Philadelphia Almshouse Hospital on the 6th of March, 1835. All the information that could be obtained from him was, that he had suffered with a bad cough, pain, in the chest, and difficulty of breathing for three weeks; that he was of intemperate habits, and that his indisposition originated in exposure to the weather.

On his admission to the ward he had great prostration of strength; pulse rather small, quick and frequent; tongue furred; voice weak; countenance distressed, which he said arose from a sense of suffocation and not from pain; cough almost constant; respiration chiefly abdominal, the movements of the chest being almost imperceptible: expectoration free and purulent. Both sides of the chest gave a very dull sound on percussion; and on applying the stethoscope, bronchial respiration alone was heard; but, owing to the exhausted state of the patient, the instrument was but partially used.†

This man died the morning following his admission. I could not be present at the autopsy; but Dr. W. B. Bacon kindly reserved the lungs for my inspection, when the following appearances were noticed.

Right Lung.—Delicate membranous adhesions over the greater part of the surface, which was uniformly hard and inelastic. On dividing it longitudinally, a small ragged cavity, not larger than an English walnut, was found beneath the apex, and several much smaller ones in the same vicinity. But the remainder of the lung was consolidated by the hepatisation of its lobules, each one of which was isolated by a deposit of tubercular matter in its enveloping cellular membrane. The tubercles thus surrounding the lobules, were mostly in the crude state, small, distinct, open in the centre, and of a turbid yellow colour when the lobules were incised with a scalpel, the tubercular matter appeared in the form of

* I have substituted this case for case IV. of the former edition.

† For these few particulars of this man's history up to the time of his death, I am indebted to the kindness of Dr Wm. B. Bacon, Resident physician to the Almshouse Hospital.

irregular rings, more than an eighth of an inch in diameter. The lobules themselves were not equally hepatised throughout, some of them being of a dull red colour, and friable, while others were partially indurated, being of a mottled reddish gray colour, with darker specks, and considerable firmness of texture: again, in a few instances the peripheral tubercular matter had suppurated, leaving a cavity of the ordinary size of a pulmonary lobule: finally, many of the hepatised lobules were also becoming tuberculous, the tubercles forming promiscuously in their substance, and in some instances in such numbers as to interrupt the distinct arrangement above described. (Pl. XIII.)

Towards the inferior part of the lung small portions were observed to retain their vesicular character, and to be free from tubercles; but in no one place was a cubic inch of such structure remaining.

The *left lung* was circumstanced precisely like the right; it was equally diseased, and the relative arrangement of the tuberculous and pneumonic portions was the same.

The bronchial mucous membrane was acutely inflamed.

Remarks. I am disposed to think that nothing but the bias of an uncompromising theory will deny that in the preceding example the pneumonia preceded the tubercles. Here is a robust man, attacked with pulmonary inflammation, which after three weeks duration destroys him. On examining his lungs almost every lobule is found hepatised to its centre, while its peripheral envelope of cellular tissue is charged with crude tubercles. Are we to suppose that these preceded the hepatisation? In those small intervening portions of the lungs which were not hepatised there were no tubercles, *for these bodies were developed in proportion to the inflammation.* The existence of small abscesses in the superior lobes does not prove that the disease commenced there; it merely corroborates the

familiar fact, that tubercular matter runs through its stages sooner in those than in other parts.—

CASE IV. A.

Phthisis induced by Pleuro-pneumonia.

In the month of October, 1834, I saw, in consultation with my friend Dr. Charles Evans of this city, a young gentleman aged 15 years, who had been attacked the preceding August with severe pleuro-pneumonia of the right side: the pain was low down, and entirely characteristic of that disease, as, indeed, were all the patient's symptoms. Dr. Evans gave me the following memorandum of the stethoscopic signs at that time: "*Subclavian region* clear and distinct towards the sternum, but less so near the apex. *Mammary region* distinct in its upper and central parts, but lower down the respiration becomes interrupted, and nearly inaudible in spots, with some mucous ronchus. *Infra-mammary region*, respiration extinct."

When I saw him on the 28th of October, we made another examination of the chest, with the entire corroboration of the preceding statement; the upper lobe, however, sounded flat on percussion, and the respiration was obviously impeded beneath the clavicle, from which circumstances we inferred the presence of tubercles.

It would require several pages of this work to detail the multiplied symptoms of this case. Suffice it to say, that previous to my seeing him Dr. Evans had treated him in the most judicious manner, in the first instance by depletion and counter-irritation proportioned to the violence of the attack, followed by every other appliance that professional ingenuity could devise. Although by these means the pain was soon subdued, and the patient for a time seemed convalescent, his symptoms recurred at intervals, and a hectic condition supervened; followed, in succession, by inordinate expectoration of caseous pus, (when the cavernous respiration became at once distinct,) fistula in ano, ulcerated throat, extreme paroxysmal oppression, the implication of the other lung, and death on the 9th of March, 1835.

Post mortem examination on the following day, by Dr. Evans and myself.

Great emaciation. The *right lung* was adherent throughout by dense false membranes, which were thickest over the inferior lobe, especially next the diaphragm, where they were absolutely inseparable. The lower lobe was hepatised, or rather in that state called *carnification* by Laennec—firm, fibrous, red and somewhat elastic, and evidently the result of long continued inflammation. The middle and superior lobes were occupied by tubercles and tuberculous abscesses, which latter were continuous to the apex, where they expanded into a very large cavity. The whole pulmonary substance surrounding the abscesses was replaced by tubercles, leaving scarcely a trace of respiratory structure.

Left lung—a considerable abscess in the apex, with disseminated tubercles in both lobes. Pleura slightly adherent below.

Bronchia extremely inflamed; an ulcer near the bifurcation the fourth of an inch broad, surrounded by smaller ulcers.

Bronchial glands, blackish, enlarged, and very hard, but not tuberculous.

Liver sound. Other organs not examined.

Remarks. The preceding case manifestly began as inflammation of the lung and pleura, which, to all appearance, developed the tuberculous affection. It cannot, I grant, be proved that there was not a pre-existing latent phthisis, which was merely excited and accelerated by the pleuro-pneumonia; but at the same time there was no reason to suspect it.

The pneumonia consequent to wounds of the lungs, is thought to have but little agency in inducing phthisis. Dr. Rush says he never knew of an example, whether the injury was inflicted by a bullet or a bayonet. In M. Broussais's 53d case, (Phthisis with ulceration, owing to the presence of a ball in the lungs,) he admits that there were no tubercles. It was traumatic pneumonia, terminating in abscess. Are we to infer that in these instances the tuberculous diathesis was wanting?

I some years since had in my care a carpenter, who broke several of his ribs by a fall from a ladder. Consumption, with a large tuberculous abscess, followed so closely upon the mechanical injury, that I was led to suppose the one had induced the other: yet there was no positive evidence that the tuberculous condition had not pre-existed, and was latent at the time of the accident.

When pneumonia, bronchitis, or pleuritis supervenes on a tuberculous condition of the lungs, the latter is often evolved with surprising rapidity, owing chiefly to the extension of the inflammation to the tubercles and the pulmonary tissue around them. It is thus that extensive tubercular disease, which may have long remained in a latent state, is suddenly excited to action, runs through all its stages in a few weeks, and constitutes *acute phthisis*, a malady recognised in the vernacular but graphic name, of a *galloping consumption*.

Pneumonia, by attacking simultaneously a whole lung, causes an obvious hypertrophy of that organ, so that all parts of it not tuberculous are either hepatised, or in the state of gray induration. Under these circumstances I have once seen the marks of the ribs on the lung, leaving distinct, white, tendinous-looking lines, while the intercostal spaces were of the ordinary colour. This fact was first noticed by Broussais, but has been positively denied by some of his contemporaries.

MECHANICAL CAUSES.

There is another series of causes that acts primarily upon the apex of the lung, producing congestion, which

is often rendered unequivocal by the appearance of hæmoptysis. Among these causes may be enumerated, excessive muscular exertion in lifting, running, boxing, rapidly ascending stairs, &c. Also, loud and continued vociferation, whether in singing, laughing, shouting or speaking;* and again, the blowing of trumpets and other wind instruments.

Let me repeat, that in such efforts the respiration is temporarily suspended, and of course with it the arterialisation of the blood, which rushes to the lungs in greater quantity and with greater velocity than ever. An apoplectic and congested state is the consequence, sometimes accompanied by hæmoptysis,† at others by a rapid succession of alternating chills and heats, excessive languor, &c.

The lungs, moreover, are liable to become congested by all sedentary occupations: thus literary men, clerks, shoemakers, tailors, weavers, and some others, contribute largely to the list of consumptive persons. I have observed weavers to suffer more than others, probably from their having to contend with a double exciting cause—a fixed position of body, and the constant inhalation of particles of the materials in which they work. And again, many of them, in this city, pursue their vocation in damp

* It is well known that Moliere died of hæmoptysis, immediately after a great vocal effort in the performance of one of his own pieces.—Mr. T. C. Grattan, in his biography of Kean, the celebrated tragedian, mentions an interview with him in these words: “ We found him, as was usual after the performance of his principal parts, stretched on a sofa, vomiting violently and throwing up quantities of blood.”

† “ Ex sauguine sputo,” says Hippocrates, “ puris sputum et fluor.”—*Aph. Sec. vii. 81.* Cullen describes phthisis as a species of the genus *Haemoptysis*.—Vide *Synop. Nosolog. Method.*

cellars, thus, adding another exciting cause to those already mentioned.

There is another source of consumption, the more to be deplored because it is sanctioned by the tyranny of fashion: I allude to the custom of *tight lacing*. It is well known that this practice, if commenced in younger life, and persisted in, greatly diminishes the lateral diameter of the chest, and necessarily cramps the lungs, deranges their functions, and disorganises their structure. In those who are predisposed to consumption, I cannot imagine a more certain mode of inducing it. (Case 28.)

If there be any advantage, as is generally conceded, in possessing a well developed chest, it must also be admitted, that whatever tends to cramp and confine the lungs, must impede their functions and of course be injurious.

INFLUENCE OF THE MIND.

We have endeavoured to show, that whatever tends to debilitate the vital energies and undermine the constitution, opens the way to phthisis; among these causes the depressing passions are conspicuously active. Of this fact Avenbrugger has given the following melancholy illustration. "When young men, not yet arrived at their full growth, are forcibly impressed into the military service, and thereby lose all hope of returning to their beloved country, they become sad, silent, listless, solitary, musing, and full of sighs and moans, and finally quite regardless of all the cares and duties of life. From this state of mental disorder nothing can rouse them—neither argument, nor promises, nor the dread of punishment;

while the body gradually wastes away under the pressure of ungratified desires. This is the disease called *nostalgia*. I have examined the bodies of many youths who have fallen victims to it, and have uniformly found the lungs firmly united to the pleura, and the lobes callous, indurated, and more or less purulent.”*

The experience of Laennec corroborates the sentiment of Avenbrugger. He had charge, for a period of ten years, of a convent which was governed by a most austere discipline. The diet of these secluded females was very indifferent, and their minds were constantly harassed by a variety of privations and mortifications, with a view to compel them to renounce their attachment to the world. “During the ten years I was physician to this association” says he, “I witnessed its entire renovation two or three different times, owing to the successive loss, by death, of all its members, with the exception of a small number consisting chiefly of the superior, the gate keeper, and the sisters who had charge of the garden, kitchen and infirmary.”

The phrase, *a broken heart*, though itself a metaphor, is often strikingly expressive of the very condition of which I am speaking. How often do we see blighted hopes and the canker of grief, prey upon and consume the springs of life! However varied may be the cause of these melancholy incidents, I have mostly observed the actual disease induced by them, to be consumption. If I might raise the veil of private history, I could cite many

* Dr. Forbes's Trans. of Avenbrugger, p. 24.

illustrations of this fact, which, however, is of too frequent occurrence to have escaped the notice of any observer.

I think I have observed that lunatics of the melancholic temperament are very prone to phthisis; whilst those of a gayer disposition, and who use much exercise, more frequently live to old age.

INFLUENCE OF AGE.

The observations of the practitioners of all ages have confirmed the opinion of Hippocrates,* published nearly four hundred years before the Christian era, viz., that the period of life most liable to consumption, is between the eighteenth and thirty-fifth years.

During a period of six years, ending with the month of December, 1835, there died of phthisis in the Philadelphia Almshouse hospital, 576 patients. Of those whose ages could be satisfactorily ascertained, (524 of the entire number) I have preserved the following memorandum:†

Under one year	-	-	-	-	-	-	5
From one year to 10	-	-	-	-	-	-	8
From 10 to 18	-	-	-	-	-	-	14
From 18 to 35	-	-	-	-	-	-	263

* *Tabes iis maxime æstatibus fiunt, quæ a decimo-octavo anno sunt usque ad tricessimum-quintum.*—*Sec. viii. Aph. 7.*

† There are slight numeral differences between the Alms-house record of deaths from phthisis and my private memoranda, arising from this fact:—patients were occasionally recorded by the resident physicians as dying of marasmus, debility, diarrhoea, bronchitis, &c., which a post mortem examination proved to be symptomatic of phthisis.

From 35 to 40	-	-	-	-	-	-	-	73
From 40 to 50	-	-	-	-	-	-	-	78
From 50 to 60	-	-	-	-	-	-	-	47
From 60 to 70	-	-	-	-	-	-	-	24
From 70 to 80	-	-	-	-	-	-	-	8
From 80 to 90	-	-	-	-	-	-	-	2
From 90 to 100	-	-	-	-	-	-	-	2

524

Thus it would seem that more patients die of phthisis between the ages of eighteen and thirty-five, than in all the other periods of life conjoined. It is well known, however, that many children die of real phthisis whose deaths are attributed to other causes; for there is a difficulty attendant on their autopsies in our public institutions, that amounts to a prohibition. Besides which, comparatively few juvenile patients are admitted into our Almshouse hospital; so that I draw no inference from the small number of the above cases which had not reached their eighteenth year.*

M. Lombard, of Geneva, supposes that tubercles are much more common between the ages of four and five years than at any other period of childhood, and, in fact, that up to this epoch they are much less frequent. It is well ascertained, however, from the recent statistics of the French hospitals, that "tubercles prevail most through the third, fourth, fifth and sixth years, when the annual growth does not exceed one tenth of the child's weight."†

* It is proper here to state the reason why so few minors are included in the above table; viz: that the children of paupers were, until the summer of 1834, provided for at the *children's asylum*, a public charity, but in a separate building and remote from the Almshouse. The two are now under the same roof.

† Clarke, On Consumption.

Numerous observations also go to prove that in the period from birth to the 15th year, fewest tubercles are found between the first and second years.

Cases have occurred of tubercles in the foetus; and in the following case, in which the patient was less than a month old, I strongly suspect the tubercular development commenced before birth.

CASE V.

Tubercles in the lungs of a child within the month.—A male infant, aged twenty-eight days, died in the Philadelphia Almshouse hospital, June 3d, 1833, of congenital strangulated hernia.

Autopsy, assisted by Drs. Porter, Bacon and Thornton.

Both lungs were free, but the left one contained in its lower lobe a number of tubercles, the largest the size of cherry-stones. Most of them were immediately beneath the pleura, of a yellow colour, and surrounded by areolæ of red, condensed pulmonary tissue. The apices of the lungs, contrary to what is usually observed, were healthy.

Right cavities of the heart dilated.

Other organs natural, excepting the left testicle, which was highly inflamed, and firmly adherent to a portion of the ileum.

CASE VI.

Tuberculous abscesses in the lungs of an infant three months old. A meagre and extremely delicate child, afflicted from its birth with cough and inanition, died on the 23d April, 1833.

Autopsy, assisted by Drs. C. A. Porter, Postell and Muhlenberg. Extreme emaciation.

Right lung filled with crude tubercles, and an abscess the size of a large filbert in the middle lobe; this cavity was partly filled with thick pus, and presented a large perforation through the pleura, which contained a little discoloured serum. The lung around the perforation (which was recent) was highly inflamed, and surrounded by a ring of coagulable lymph.

Left lung. A funicular abscess towards the apex, almost as

large as a hen's egg; the cords were numerous, crossed the cavity in all directions, were still pervious, and by means of a wire were traced to the pulmonary artery; their surface was enveloped by yellow tubercular matter, interspersed with red granules. Several vomicæ and numerous tubercles, in both the inferior lobes.

Liver and *heart* healthy. *Mesenteric glands* much enlarged, with a few disseminated tubercles.

Brain. Considerable effusion in the ventricles.

Remarks.—It is probable that the immediate cause of death in the above case, was the violent pleuritis consequent to perforation of the lung.

After puberty, tubercles attain an additional development, especially in the lungs, intestines, and some other parts of the lymphatic system.

Circumstances render it probable that tubercles generated in infancy, often lie dormant until adult age, when the vital functions having completed the human fabric, are prone to manifest their redundancy by diseased secretions.

INFLUENCE OF SEX.

There is one point on which authors very much agree in sentiment, viz: that women are more subject to phthisis than men. "Several obvious causes," observes Dr. Forbes, "explain the greater liability of females to phthisis; the chief of these are, their greater original delicacy of constitution, their most deleterious system of physical education from the age of ten to puberty, the wearing of stays, and the exposure of the upper parts of the chest."*

While I concede the justness of these remarks, I am unable to add to their weight by any precise observations

* Notes to his Translation of Laennec, p. 338.

of my own. The public institution with which I was for several years connected in this city, contains a much smaller proportion of women than of men in the clinical wards, so that I found any calculations from this source would be fallacious.

INFLUENCE OF CLIMATE AND SEASONS.

The effects of climate on consumptive diseases will be hereafter noticed in detail; the question in this place is, how far a climate operates in producing phthisis.

Cold and damp situations, by checking healthy perspiration, and consequently disordering the visceral secretions, are fruitful causes of consumption. I have, at different times, examined the bodies of six lunatics, each of whom had been confined from one year to three years in the lower cells of the Philadelphia Almshouse Hospital, (which are extremely cold and humid) and in every case found the lungs excessively disorganised; in five by tuberculous disease, and in the sixth by chronic pleurisy and catarrh.

Vicissitudes of climate, sudden changes from heat to cold, or the long continuance of cold, wet weather, produce similar results; and it seems as if habit, in this instance, had little or no preventive influence, inasmuch as the native inhabitants of the northern latitudes of both Europe and America are, with certain exceptions, extremely liable to this disease.

In order to illustrate the influence of particular seasons of the year on the mortality from Phthisis, I have drawn the following Table, which shows the number of deaths in

each month, of the 576 cases already stated to have died of consumption in the Philadelphia Almshouse, during a period of six years:

	1830.	1831.	1832.	1833.	1834.	1835.	Total.
January,	11	9	9	11	6	7	53
February,	9	11	6	6	6	8	46
March,	10	6	15	18	9	14	72
April,	8	8	10	11	10	11	58
May,	13	7	11	10	7	10	58
June,	8	5	4	5	6	14	42
July,	5	3	7	10	8	9	42
August,	6	3	3	6	8	3	29
September,	7	4	2	10	10	9	42
October,	2	6	3	10	7	4	32
November,	7	7	9	7	9	8	47
December,	11	11	11	8	9	5	55
	97	80	90	112	95	102	576

From this table it appears, that during the summer and autumnal months, from June to October inclusive, there were but 187 deaths: while in the remaining seven months the mortality was 389. These observations go also to corroborate the common opinion, that March is more destructive to consumptives than any other month of the year.

CIRCUMSTANCES IN LIFE.

Affluence is, to a certain degree, some protection against consumption, because it enables its possessors to avoid many of the remote causes of the disease; and when it does appear, to avail themselves of those resources to which poverty can never have access. Statistical observations prove, that consumption is most prevalent among

the thinly clothed and badly fed inhabitants of all countries.

“Dr. Jenner, found that it was possible by feeding animals on unwholesome food, to call up diseases in different organs, but especially in the liver. He also ascertained that, by altering the external circumstances and improving the diet of the animal, disorganisations which had advanced to a considerable extent, might be removed.”*

Although consumption makes its chief havoc among the poor and the miserable, we often see it invade, without distinction, the abodes of temperance, of refinement and of luxury, and number among its victims, the young, the accomplished and the beautiful!

The reason of this is obvious. The midnight application of the student, the imprudence in dress so common among fashionable females, and the various excesses which too often form a part of the recreations of the wealthy, produce those same liabilities to consumption, which, though from different causes, are entailed upon the indigent and the miserable.

Tranquillity of mind is of incalculable advantage in the preservation of health, and in promoting the convalescence of the sick. The buoyant spirits so common in consumption, tend greatly to prolong life; in the first place by their direct effect on the constitution, and in the second place by inducing the patient to persevere in his accustomed active habits, by which his appetite is preserved, his sleep rendered more refreshing, the hectic mo-

* Baron, *Delineations, &c.* p. 25.

derated, and consequently the strength of the system supported and prolonged.

“ The least mortality occurs in France,” says Dr. Hawkins, “ in the districts where ease and happiness are most common; as in the departments of Calvados, of L’Orne, and de la Sarthe; in these, one individual dies annually in fifty; but how painful a contrast is presented by the twelfth arrondissement of Paris, where the annual deaths are about one in twenty-four!”

INFLUENCE OF MALFORMATION OF THE CHEST.

That a narrow and badly developed chest, is a common accompaniment of phthisis, is familiar to every body, but that it is a cause of phthisis in persons not predisposed to it, is very doubtful. I have had but two opportunities of examining the thorax in cases of curved spine, for in our country this malady is comparatively rare. In one of these instances, in which chronic catarrh had existed for years, no tubercles were developed. (*Case 34.*) The other case, which was equally satisfactory, occurred in the practice of my friend Dr. Henry Bond in the summer of 1834. A respectable woman, aged 65 years, died of inflammation of the bowels, and at the request of her friends her body was examined by Dr. Bond and myself. She had been from childhood excessively deformed by a curvature of the spine; nor do I recollect ever to have witnessed a case of so great distortion of the upper half of the body. Her person was greatly emaciated; and three years antecedent to her death, she had suffered much from a severe attack of pleurisy. From the existence of the scrofulous dia-

thesis, the distorted thorax, the compressed lungs, and the local pulmonary affection, it was reasonable to expect the occurrence of tubercles, if any connection exists between them and scrofula: yet we found both lungs sound in their parenchyma throughout, although they contained, (as in case 34,) three small osseous concretions, the largest the size of a cherry stone, from which we could not find that she had suffered any inconvenience: nor was there any contraction or puckering of the surface of either lung. I submit these cases in proof of the opinion, that there is no necessary connection between scrofula and consumption.

I can add, that although I have had a number of patients with curved spine under my care in public and private practice, I never knew one of them to die with consumption, although a number have had catarrhs. In fact, my observations on this unfortunate class of persons has led me to the conclusion, that although they often suffer with catarrhal affections, they rarely die phthisical; and that if they attain the age of puberty they live beyond middle life.

A malformation of the chest of a more extraordinary nature, has recently come under my notice; and as it is a forcible illustration of the subject before us, I shall relate some particulars.

In the month of November, 1834, I was requested by Dr. Isaac Parrish to assist at the examination of the body of a gentleman under the following circumstances: He had been attacked some months previous with inflammatory rheumatism, on the decline of which dysentery made

its appearance; so that between the two he was extremely reduced. Two weeks before death he had free haemoptysis; and a few days subsequent to the hemorrhage, pleurisy supervened in a most acute and painful form, so that he survived but a very short time. It is necessary to mention that he was naturally of a delicate constitution, and had been troubled with a dry cough for upwards of two years. These circumstances had led his friends to suppose him consumptive; and at the time of his death they had little or no doubt of his being so, although I am not aware that his physician (Dr. Sharpless, at the time of the autopsy absent from the city) had expressed such an opinion. On exposing the naked chest, it presented a remarkable concavity, occasioned by the second bone of the sternum being curved inwards towards the spine, the proximate cartilages following the same course, so that the depression both in shape and capacity resembled a pint bowl. The posterior surface of the sternum was within three-fourths of an inch of the dorsal vertebræ. The right lung, together with its pleura, was perfectly healthy. The left pleura contained upwards of two quarts of turbid serum, with albuminous flocculi. The pleura itself was intensely inflamed, and covered almost every where with the albuminous secretion, which in some places was rapidly assuming the firmness of false membranes. The lung itself contained, at its very apex, about a dozen very small diaphanous granulations, immediately around which the lung was compressed, livid and impervious to air. The proximate surface of the pleura was slightly retract-

ed, (in the manner hereafter to be described) as if a few other granulations had pre-existed, but had been removed by absorption; for no cicatrix was perceptible.

Here was deformity of the chest to a remarkable degree, and cough (probably a consequence of the deformity) of two years continuance, in a delicate and irritable constitution; and notwithstanding all this, the lungs were healthy excepting the few granulations above mentioned, and even these were in an inert state.

CONTAGION.

Some authors have insisted on the contagious nature of phthisis. No case that I could attribute to such a source has come under my notice. Hereditary predisposition amply accounts for its appearance in several individuals of the same family successively; and in others it can be traced to the constant watching, anxiety, grief and other circumstances which often prey on those who administer to the necessities of protracted disease. Yet a remarkable instance occurred to me, which may be mentioned in a few words: I attended the wife of an innkeeper in chronic consumption; she died after having been ill for nearly two years. Her husband was a short, athletic, florid-complexioned man, the very reverse of what we usually see in phthisis; and yet he also died of that disease six months after his wife. I look upon this case as an accidental coincidence, yet one which would by some be referred to contagion.

This belief was at one period prevalent among physi-

cians, and even deterred some eminent men from practising post mortem examinations. It is said that among this number was the celebrated Valsalva.

The same idea is still popular in Italy, Spain, Portugal, and some of the Spanish American provinces. In these countries the clothes and bedding of phthisical persons are burned to prevent contagion.*

* In doubting the contagious nature of phthisis I do not wholly deny it. Some highly interesting remarks and cases, will be found in a paper by Dr. Coventry, in the U. S. Med. and Surg. Journal, for June, 1835.

CHAPTER V.

SYMPTOMS OF CONSUMPTION.

CONSUMPTION has been generally divided into two stages, the *incipient* and the *suppurative*. That these epochs do occur in a great majority of cases there can be no doubt; but patients occasionally die from the irritation of a vast congeries of tubercles, before these have advanced to the second stage, (*Case 8:*) again, tubercles sometimes run on to suppuration, abscesses form, and the patient dies without having experienced any marked symptoms of the disease, which is only revealed after death. Yet as the distinction referred to has its uses, I shall retain it.

The first, or incipient stage, is usually marked by some or all of the following characters: a short, dry cough, with dyspnœa, pain at the scrobiculus cordis, or in some other part of the chest; febricula, with dryness and burning heat of the palms of the hands and soles of the feet; lassitude, and corresponding fatigue after slight exertion; florid lips, hectic flush of one or both cheeks, and hæmoptysis.

In the *second stage* the cough becomes more violent and more paroxysmal, accompanied by muco-purulent expectoration, often streaked or mixed with blood; sense of weight and oppression in some part of the chest; respiration short, greatly accelerated by slight efforts; hectic regular, with evening exacerbations and night-sweats; slight erratic pains in the chest, or between the shoulders; tor-

mina; emaciation; shrivelled skin; œdema of the feet; aphthous mouth; sore throat; loss of voice; hippocratic countenance; incurved nails; livid complexion; eyes glistening and pearly; diarrhoea, and extreme exhaustion.*

The emaciation becomes extreme even while the appetite is unimpaired: the latter is mostly good, sometimes inordinate. The dyspnœa is often less in the second than in the first stage, but the throat suffers more, and deglutition is often painful. Hæmoptysis, in a certain proportion of cases, is wholly absent, even where it may have occurred repeatedly in the first stage.

The complexion varies strikingly in the course of a few hours, presenting the hectic flush at one time—an earthy paleness at another: again, in persons of a sallow complexion, there is often a livid hue, which, in combination with the shrunken features, gives the countenance a ghastly expression. Other appearances have been supposed to be characteristic of phthisis, which I suspect are entirely accidental. Thus Dr. Withering and Dr. Darwin insist on an unusual magnitude of the pupil: I have examined nearly one hundred patients in reference to this particular, and satisfied myself that it is wholly attributable to the darkness of the chambers in which patients are habitually kept when very ill. Dr. Foart Simmons asserts that he rarely found a consumptive person with a carious tooth—a remark for which I can discover no foundation.

* “*Tertia est longeque periculosissima species, quam græci φθιση nominarunt: oritur fere a capite; inde in pulmonem destillat; huic exulceratio accedit; ex hac febricula levis fit, quæ etiam, cum quievit, tamen repetit; frequens tussis est; pus excreatur; interdum cruentum aliquid.*” CELSUS, M. Med. Lib. III. Cap. xxiii.

Every practitioner, however, must have observed that in this, as in all chronic diseases accompanied with emaciation, the teeth become much whiter and clearer; owing no doubt to the absorption of a part of their animal matter.* In a case of violent and protracted catarrh, I observed the teeth to lose their habitual discoloration, which, however, re-appeared in the progress of convalescence.

With respect to the more prominent and diagnostic symptoms of phthisis, I now proceed to offer a further exposition.

COUGH.

The cough in the first stage, as already stated, is dry or attended by slight mucous expectoration. It is almost constant, unless allayed by opiates, but is worse at night. If, however, the patient sleeps through the night, he finds his cough much aggravated in the morning, and it is generally several hours before he relieves himself of the accumulated secretions.

When suppuration has taken place, the contents of the abscesses are of course excreted through the bronchia, and the cough is generally in proportion to the purulent secretion, and for the most part accompanied by it.

Hence it is that patients obtain little respite at night unless by artificial means; for if the sputa are profuse they cannot be retained. Yet I have repeatedly met with the reverse condition, wherein the cough was nearly or

* It is probable that all the bones suffer a diminution of their animal matter under the circumstances above mentioned; but I do not recollect to have met with any observations on this subject.

wholly suspended during the night, and returned soon after the patient had risen in the morning.

The cough in other persons is intermittent, recurring on certain days, and sometimes with singular precision at certain hours of the day, or night. This phenomenon, however, is also common in catarrh.

It is well known that patients have died of consumption without having been troubled with cough; in other cases it ceases sometimes before death.

CASE VII.

Disappearance of cough nine days before death, and remarkable absence of the other symptoms of phthisis.—John Brady, a mulatto hostler, aged twenty-nine, was admitted into the Philadelphia Alms-house hospital in December, 1832, with a troublesome cough, extreme languor, and corresponding mental hebetude. He remained in the house all winter, and came under my care on the 1st of February, 1833. Complains of nothing but inordinate fatigue and weariness; assures me that he has never had hæmoptysis, pain or night-sweats, nor have any of these symptoms been noticed since admission; coughs considerably, but does not appear to be distressed by it. Expectoration scanty. The stethoscope proves the respiration to be very dull in the upper half of the left lung.

February 6th. Cough and expectoration less than ever. Lethargic and almost unconscious.

February 8th. Cough and expectoration have ceased. Complete aphonia.

February 10th. Somewhat revived, but cannot speak. Retention of urine, which flowed freely through the catheter. Appears to suffer pain in the lumbar regions when moved. Involuntary fecal evacuations.

February 14th. Pulse better; voice returned so as to be intelligible; urine and feces under control of the will, but no cough; has, however, subsultus tendinum, facies hippocratica, and the

same languor which has induced him to lie in one position, on his back, for nearly two weeks past.

February 17th. Died.

Autopsy, assisted by Drs. Mason and C. A. Porter.

The *right lung* was free, but charged with tubercles in all its lobes, especially in the upper one; no vomicæ, and no infiltration.

Left lung adherent throughout, by slight membranous laminæ, and literally filled with tubercles in every stage of development, from minute granules to vomicæ, though the latter were mostly not larger than a small filbert. This lung could have subserved no part in the respiratory function for a considerable period before death.

Heart natural.

Liver, kidneys and bladder healthy.

Remarks.—This case is highly interesting, inasmuch as it proves to what extent tuberculous disorganisation may proceed in the lungs, without producing the usual symptoms of phthisis.

Louis* mentions the case of a patient who died of consumption without having had either cough or expectoration, although there was hectic and hæmoptysis: both lungs were tuberculous, and one of them had a cavity. I shall hereafter narrate (*Case 13*) an almost entirely analogous example. Dr. Dewees, however, has justly observed, that a cavity proves the existence, at some time or other, of pus, and therefore that there must have been expectoration, although it escaped notice.

The sudden and entire cessation of cough, is to be accounted for in one of three ways; first, the inability of the patient to expectorate the secreted fluids, which are hence retained in the bronchia. Such I conceive to have

* *Recherches*, Obs. 32. Morgagni gives similar examples.

been the case with my patient above cited, whose most prominent symptom was extreme languor. 2. This phenomenon may also temporarily result from perforation of the pleura, owing to the escape of the fluids into that sac. 3. The secretory function of the bronchial mucous membrane appears to be sometimes wholly suspended.

M. Andral and others, also refer the cessation of cough to the absorption of the purulent secretions: of which, however, I have seen no unequivocal instance.

CASE VIII.

Cessation of cough two weeks before death; fatal termination from a vast congeries of unsoftened tubercles.—John Faust, a Rhenish German, aged twenty-two years, light hair and complexion, blue eyes, narrow chest, emaciated person, came under my care in the Philadelphia Almshouse hospital, February 1, 1833. Says that he has been for more than four months in poor health, with pain at the inferior margin of left side of thorax: inconsiderable cough, but profuse expectoration, night-sweats, loss of appetite and repeated hæmoptysis.

February 10th. Tongue florid, moist; severe pain in epigastrium.

February 14th. Emaciation goes on rapidly.

February 20th. Pulse frequent and tremulous; tongue nearly natural: mind partially deranged; eyes bright, wild and staring. Coughs seldom and expectorates little or nothing.

March 1st. Has not been observed to cough for a week past: other symptoms as before.

March 6th. No return of cough; pulse feeble; limbs cold and moist; eyes sunk in their sockets, with constant strabismus; facies hippocratica, and the most extreme emaciation I have ever witnessed.

March 7th. Died.

Autopsy by Dr. J. Pancoast, at my request.

Right lung slightly adherent; its upper lobe filled with tubercles, but no vomicæ: lower lobe but slightly diseased.

Left lung firmly adherent throughout, and solidified by tubercles and tubercular infiltration, with a very few softened tubercles. Bronchial mucous membrane slightly inflamed.

The *bronchial glands* and the *glands of the neck* prodigiously enlarged.

Heart natural. *Viscera of the abdomen* but little impaired.

In the month of October, of the present year, I was consulted by a young man from Vermont, who had slight haemoptysis every morning. Three months it had been profuse, with considerable cough. Since that period he assured me that he had had no appreciable cough. Yet the upper lobe of his right lung appeared to be loaded with tubercles; which opinion was corroborated by the fact of his being of a decidedly consumptive family, and that, of his brothers and sisters, two had died of phthisis, and two others were struggling with the disease.

HÆMOPTYSIS.

Hæmoptysis for the most part occurs in the first stage of phthisis, is several times repeated at short intervals, and is accompanied by a depression both of mind and body, which the quantity of blood lost can in no degree account for.

Hæmoptysis is not necessarily followed by consumption, although it is a very general precursor of that disease. Neither is phthisis always attended by spitting of blood; for I cannot be certain that more than two-thirds of my cases have had this symptom. It is probable, however, that this proportion is too small; for I have occasionally met with a strange disposition in patients to conceal the fact, even after I have been assured of it by their friends.

It has been remarked by M. Andral, that of those who have had haemoptysis, one fifth were free from tubercular disease; whilst of those who die of consumption, a sixth part never spit blood.*

The sources of haemoptysis are four:

1. The bronchial mucous membrane.
2. The pulmonary tissue.
3. The rupture of a vessel.
4. The parietes of abscesses.

Let us examine each of these sources more in detail.

1. *Haemoptysis from the bronchial mucous membrane.*

Bronchial hemorrhage.—This follows violent efforts of coughing, of which it is mostly a mere mechanical consequence. In other instances a sudden titillation is felt in some of the air-passages, followed by a spitting of more or less frothy, florid blood, which often merely streaks the saliva, but in other instances is profuse and difficult to suppress.

I grant the difficulty of identifying haemoptysis from this source; but I have observed it to be unattended by those constitutional symptoms, hereafter to be mentioned, that usually occur with pulmonary hemorrhage. It may of course take place from any part of the mucous lining of the air-passages, and not unfrequently from the larynx itself.† Again, this kind of haemoptysis is not unfrequently simulated by an oozing of blood from the pharynx and posterior nares.

* Clin. Med. t. ii. p. 39.

† When haemoptysis proves fatal this bronchial mucous membrane is found in a congested state, which is specially marked by innumerable points and patches of a deep red colour.

* 2. *Hæmoptysis from the pulmonary tissue. Pneumorrhagia.*—This morbid affection, says Laennec, is caused by an effusion of blood into the cellular tissue and air-cells. It is attended by heat and weight in the chest, cough, difficulty of breathing, languor, and a frequent, irregular pulse: the limbs are cold, or there are alternations of chill and heat. These symptoms, however, are often absent; and the patient suddenly expectorates a considerable quantity of blood, with scarcely any other inconvenience. The blood is of a bright red colour, at first liquid and pure, but becoming frothy, discoloured, and mixed with saliva if the hemorrhage recurs, as it usually does, at short intervals.

This species of hæmoptysis is induced by violent efforts of mind or body, which, by producing at the same time an increase of circulatory and a diminution of the respiratory function, give rise to a congestion of the pulmonary vessels. The congestion thus induced, is one of the most fruitful sources of consumption, of which the following will serve as an example:

CASE IX.

Phthisis induced by a violent physical effort, causing profuse hæmoptysis.—S. D., a black labourer, aged thirty-eight years, was admitted to the Philadelphia Almshouse hospital, January 3d, 1833, with confirmed consumption. He is a tall, athletic man, with a remarkably broad, expanded chest, and other external appearances of a once robust frame. Says that about three years ago, in an effort to roll a bag of cotton without assistance, he was suddenly seized with profuse spitting of blood, followed by ex-

* Hæmoptysis in conjunction with Pulmonary apoplexy has been already noticed.

treme languor and a chill, so as at once to disable him. He went home, and was under medical treatment for several days, the hemorrhage recurring at times, and attended by a feverish state. From that time to the present he has never been well, (though he assures me his health was perfect before the hæmoptysis,) having habitual cough, sanguineous expectoration, hectic fever, night sweats, and paroxysmal pain in the left mammary region. Under all these symptoms he labours at present. The upper half of the lung yields a dull sound on percussion, and the stethoscope detects cavities beneath the apex. The pericardium seems to contain considerable fluid, causing violent palpitation.

This man's symptoms continued much the same until the 14th of February, when his pain had left him; his tongue was natural, his appetite good, but the emaciation was more obvious, and the hæmoptysis frequent, but in small quantity.

March 9th. Diarrhœa last night, followed by great exhaustion. This symptom was readily checked, but recurred at short intervals until the 22d of March, when it became unmanageable and carried him off.

Autopsy, assisted by Drs. T. F. Betton, Simpson and Reeve, thirty hours after death. Great emaciation.

Right Lung free; the superior lobe was full of tubercles, with a few interspersed vomicæ in the apex.

Left lung firmly adherent, contracted, and destitute of vesicular structure: on the contrary, it presented a series of funicular abscesses, extending from the apex to the base; the cords traversing these cavities were very numerous, mostly flattened, and towards the apex of the lung completely pervious, so that by means of a probe they could all be traced to the pulmonary artery: some of the larger branches were the diameter of a goose quill, their parietes much thickened, of an opaque yellow colour, with portions of adherent tubercular matter. The parietes of the abscesses consisted of dense, greenish-red structure, containing considerable fluid pus. The anatomical characters of this unusual case are accurately delineated in Pl. IV. fig. 2.

Heart greatly dilated, with a slight excess of serum in the pericardium.

Other organs not examined.

Remarks.—All circumstances considered, we may refer the origin of the preceding disease to pulmonary apoplexy, of which the haemoptysis was a consequence and indication. With respect to the hemorrhage of the second stage of the disease, the denudation of the vessels might lead to a suspicion that it arose from a direct rupture of some one of them; but a most careful examination of the parts could detect no such appearance, and the tuberculous state of the right lung amply accounted for the continuance of this symptom.

CASE X.

Hæmoptysis from a violent physical exertion, followed by acute phthisis.—B. D., a female cook, aged twenty-three years, with dark hair, light complexion and a strong frame, was admitted into the Alms-house hospital, July 10th, 1833, with confirmed phthisis. She then informed me that while engaged in her vocation early in April last, and during great bodily exertion in a hot room, she was suddenly seized with profuse hæmoptysis. She assured me (and the family in which she lived confirm her statement,) that up to the time of this occurrence, her health had been uniformly good, and even robust. Not aware of the serious nature of her disease, she concealed it for a week, during which time she frequently spit up more or less blood. She then called at my office, but not finding me at home, received advice from a respectable practitioner in the neighbourhood, who freely bled, and otherwise depleted her. Not obtaining relief, but, on the contrary, growing worse every day, she entered the Alms-house with active hectic, purulent expectoration, night-sweats, dyspnœa, loss of appetite, and hæmoptysis, the latter recurring every day, and often profusely several times in the day. The stethoscope detected extensive abscesses in the upper half of the right lung. With these complicated and fatal symptoms she lingered thirteen days, and died on the 23d of July, without apparent suffering.

Autopsy, assisted by Dr. Allen, fifteen hours after death. Emaciation not remarkable.

Right lung firmly adherent at apex; on cutting into the lung it was found charged with light gray tubercles, the size of a pea, with interspersed smaller granules: the two upper lobes contained numerous vomicæ; the largest the size of an English walnut, and almost all of them surrounded with a firm cartilaginous cyst. The interstices between these vomicæ and tubercles in the superior lobe, were occupied by flabby pulmonary structure, of a dark livid or purple colour, in which the air-cells were apparently obliterated: it wanted the granular and solid structure of hepatisation, and in fact bore no resemblance to any grade of pneumonia. The proximate surfaces of the pleura were of the same livid tint.

Left lung slightly adherent: the superior lobe contained two small vomicæ and vast numbers of tubercles, together with the livid appearance already noticed, but in less degree: lower lobe healthy.

Bronchial glands enlarged.

Bronchial membrane inflamed throughout.

Other organs not examined.

Remarks.—This was a case of *acute phthisis*, commencing with violence, and running through all its stages in a little more than three months. The first symptom was hæmoptysis, which is proved to have occurred in the apices of the lungs by two circumstances revealed in the autopsy, viz. these parts being most affected by tubercles, and the surrounding parenchyma presenting the physical characters incident to engorgement or congestion: the disease having been short in its duration, the appearances in question were very conspicuous; had the disease been much prolonged, the livid parenchyma that remained would also have become tuberculous, and all traces of the original congestion destroyed.

3. *Hæmoptysis from the rupture of a vessel.*—This is an extremely rare occurrence; for it has been already shown,

that in proportion as blood-vessels are denuded by ulceration, their parietes become thickened at the expense of their calibre, and their functions interrupted or destroyed. If haemoptysis was a constant or even a common result of such denudation, it should increase with the progress of disease, and be most profuse in the second, or apostematous stage; whereas the very reverse takes place. Again, I have often observed extensive denudation of vessels, in the lungs of those who never had been attacked by haemoptysis.

Andral mentions an instance in which a vessel opened directly into an abscess; and Bayle gives the case of a patient who died of a frightful hemorrhage from a ruptured denuded artery, as was proved on examination after death. One of the crises of the following case, of an intelligent gentleman yet living, may, I think, be classed with this species of haemoptysis.

CASE XI.

Repeated haemoptysis: once from a ruptured blood-vessel? Chronic phthisis?—A young gentleman,* of robust frame, good general health, brown hair, fair complexion, and prominent eyes, whose habits were of an extremely studious and sedentary character, was attacked, in October 1821, with a singular and indescribable sensation in his chest, followed gradually by some pain, cough, emaciation, a pale sickly countenance, and general debility. Notwithstanding these symptoms, they were concealed by the patient, who continued his professional studies as before, until May, 1823, when he was seized by pain aggravated by respiration, accompanied by great oppression, or sense of weight in the lungs, at

* The patient himself, at my instance, politely furnished me with the facts from which I have compiled this history. He is now himself a physician (1836.) In this edition I have added a few particulars inadvertently omitted from the former one.

first paroxysmal, but in a few weeks becoming almost constant: the cough increased greatly, and was attended by dark and very offensive sputa. Towards the last of June hæmoptysis was added to the preceding symptoms; a mouthful of blood at first following several successive spells of coughing, and then flowing so fast that upwards of a pint was lost in about fifteen minutes: extreme exhaustion and dyspncea followed; but the hemorrhage continued for two or three days to colour the fetid purulent sputa, and then disappeared. But the very same symptoms recurred again in nine days, with even greater violence, causing a total prostration of strength, with a cold and livid skin, and all the appearances of approaching death. Five days thereafter, on the 3d July, the hæmoptysis came on for the third time, and more profusely than on either of the former occasions. It is needless to add that the powers of life were now nearly exhausted, and the patient's friends and physicians hourly awaited his death. But strange to tell, the patient recovered slowly from these violent assaults of disease, and his cough, pain, dyspncea, &c. all disappeared for about four years, leaving him in the enjoyment of pretty good health, though with an obviously broken constitution. It may be remarked that in these several attacks of hemorrhage, the treatment consisted in the application of blisters to the chest, followed by tartar emetic ointment, rubefacients to the extremities, and the internal use of wild cherry tree bark. The patient subsequently took a sea voyage, and on his return home went into the country and employed himself actively on a farm.

On the 30th of June, 1829, being in the city of New York, profuse hæmoptysis came on again without any known exciting cause; it recurred next morning and again on the afternoon of the same day; so that in these rapidly consecutive paroxysms nearly two quarts of blood were lost in the space of 53 hours. He then left for Philadelphia, was again attacked with hemorrhage in Brunswick, but reached home in safety, though exhausted to an extreme degree by loss of blood. These attacks, as before, were preceded by a peculiar and indescribable sensation in the lungs, warning the patient of their approach. Cough and some pain followed the hæmoptysis, leaving him very liable to take cold on slight exposure; horseback exercise, a seton, and some minor remedial resources, restored him to tolerable health.

In the month of April, 1830, his expectoration was for several

days streaked with blood, but so slight that it was by him referred to the fauces; but finally, in the act of throwing off his coat, he felt what he has described to me as *a snap in the left lung, as sensibly as if a small cord had broken there.* Warned by the sensation, of what had happened, he sat down and awaited the result, and in a few moments spit up about a gill of pure, florid blood. Although Dr. Noble, who was immediately sent for, used all the usual plans to check the hemorrhage, it recurred three times during the two following days. But a naturally robust constitution triumphed over this, as over former attacks; and the subject of them, although much enfeebled, was soon after able to resume his professional studies, and is now a physician in active practice.

A recent application of the stethoscope proves that his respiration is very imperfect in the infra-mammary region of the left side; but I cannot detect an abscess, although the symptoms at one period gave almost unquestionable evidence of the existence of such a lesion.

Remarks.—As auscultation was not resorted to in the active stage of the preceding case, it is not possible, to say positively in what the disease consisted. It seems probable, however, from the successive attacks of illness, the long interval between them, and the nature of the symptoms, that this was an example of a series of tuberculous abscesses, each of which was combatted by a strong constitution, until they now appear to be obliterated altogether. As no physical signs give, at this time, any evidence of a cavity in the lungs, it is a reasonable supposition that in this instance the disease has been cured by cicatrisation. It will be observed by the dates that fifteen years have elapsed since the primary attack. For the past five years there has been no serious recurrence.

The long continuance of the preceding disease, its

sudden and violent paroxysms, and the present comparative health of the patient, should at least inspire the practitioner with hope, and induce him to persevere to the last in every plan of treatment that promises even a palliation of disease.

4. *Hæmoptysis from the parietes of abscesses.*—I am not aware that this source of hæmoptysis, in tubercular disease, has been much noticed by pathologists: although Bayle has remarked* that in simple pneumonic cavities, evidences of hemorrhage are not unfrequently met with, of which I shall hereafter give an example. (Case 33.)

I suspect the hæmoptysis to be derived from this source when the blood is of a light pink colour, and pervades the purulent matter; or when it is of a uniform dull or brownish red tint, mixed with the other secretions, and recurs at short intervals through a protracted period of time.

CASE XII.

Hæmoptysis from the granulations of an abscess.—H. S., a quarryman, aged thirty-six years, of a short, meagre person, sharp features, light complexion, dark hair, and intemperate habits, was admitted into the Philadelphia Almshouse hospital, November 6, 1832, with hæmoptysis. When I took charge of the wards, on the 5th February, 1833, he gave the following account of himself:—that he was seized with severe pain in his left breast in the autumn of 1831, followed by cough and spitting of blood; fever soon followed, with profuse purulent expectoration, which was almost constantly mixed with blood. Under these symptoms he now labours, together with extreme debility, and great emaciation.

February 14th. Cough and hæmoptysis almost constant, though but little blood is expectorated each time. Slight diarrhoea. The tongue clean.

* *Recherches*, t. i, p. 30.

February 20th. Diarrhoea checked, but the other symptoms continue as before, the night-sweats and haemoptysis being very harassing.

March 2d. The sudden accession of cold weather, viz. from 55° of Fahrenheit to 15°, has greatly reduced the patient; he has sanguineous diarrhoea, with severe pain in the rectum, and haemoptysis as before. Pulse feeble. Countenance exsanguious.

On the evening of same day he was seized with acute pain in the left axillary region, and thence shooting through all parts of the side of the chest. Vomits all ingesta. Debility extreme.

March 3d. The stethoscope detects cavernous respiration at the apex of the left lung.

March 6th. The cough and expectoration, after having been absent for nearly sixty hours, re-appeared this morning, attended by considerable haemoptysis, and severe paroxysmal pain in the epigastrium.

March 15th. Colliquative diarrhoea.

March 20th. Diarrhoea checked: free expectoration of purulent matter and blood.

March 28th. Still complains of severe pain in the epigastrium, and vomits every thing he swallows. Facies hippocratica, and completely exsanguious.

The patient lingered until the 19th of April.

Autopsy, assisted by Drs. Simpson, Muhlenberg and Carson, five hours after death. Ultimate emaciation.

Right lung firmly adherent at its superior portions by old false membranes: several small abscesses in the superior lobe; respiratory structure tolerably well preserved in the middle and lower lobes, although even these contained numerous disseminated tubercles and some vomicæ.

Left lung adherent above by fibro-cartilaginous membranes. In the superior lobe was a circumscribed abscess the size of a hen's egg, lined by a firm, coriaceous membrane, half a line in diameter. The internal surface of this cyst was studded with patches of *red, vascular granulations, of an extremely delicate structure.* (Pl. V. fig. 2.) Beneath this abscess were numerous smaller ones, of the funicular kind, communicating freely almost to the base of the lung. The pulmonary structure around the cavities was replaced by gray induration, interspersed with tubercles and tubercular masses, in all stages of development.

The *bronchial mucous membrane* was unusually pale, being of a uniform light straw colour: one of the smaller tubes contained a ramose, osseous concretion, more than an inch in length.

Other organs not examined, in consequence of the presence of the brother of the deceased. —

Remarks.—In the preceding case the bronchia were considered healthy at the time of the examination; but it is probable, however, that they were in a certain morbid condition already spoken of under the head of Bronchitis. (p. 25.) The gentlemen present at the autopsy, agreed with me in attributing the probable source of the hæmoptysis to the granulations of the abscess; for these granulations were so delicate, so vascular, so numerous, that it seemed impossible they should not bleed during the patient's violent and often protracted efforts of coughing. On a subsequent occasion I met with unequivocal hemorrhage from the parietes of tuberculous abscess, but the granulations above mentioned were absent.

Clots of blood are occasionally seen in tuberculous cavities; and I have repeatedly observed the fluids of such cavities tinged with blood.

PAIN.

This may be considered one of the most equivocal symptoms of phthisis. The great majority of patients declare that they suffer no pain in the chest, or at least so slight that it has not fixed their attention. Instances analogous to the following one are not unfrequent. In the month of August, 1834, I was sent for to see a young man who had been married the previous day, and gave

me the following history of his case. He had long had a troublesome cough, night-sweats, and emaciation; but no haemoptysis, pain, dyspncea or pulmonary distress of any kind; whence he assured me that he believed his lungs to be perfectly sound, and that his disease was confined to his windpipe. I applied the stethoscope, and found the upper part of the right lung completely devoid of respiration. The patient seemed at first unwilling to acknowledge the injury his lung had sustained; but in a few days he began to feel some uneasiness in the affected part, followed by the expectoration of about a pint of matter, which I did not see, but which I have no doubt was the contents of an abscess. From that time he began to decline, and died at the end of eight weeks; during the latter part of this time he suffered great pain in the throat and bowels, but none in the lungs.

In the first stage the pain is mostly in the vicinity of the lower bone of the sternum (præcordia,) or between the shoulders: the latter is probably owing to inflammation of the pleura on the upper and posterior face of the lung; for we more frequently find adhesions in that vicinity than any where else.

In the second stage, as abscess forms and the pleura becomes involved, inflammation of that membrane follows, occasionally causing acute pain over the whole of the affected side. Such is particularly the case, as already observed, when perforation takes place, though even this lesion may occur without pain.

It may be reasonably inferred that the lungs are among the most insensible organs: large abscesses form in them,

and they become not only vastly disorganised, but even destroyed during the life of the patient, who, were he to judge merely from the pain he experiences, might suppose himself free from disease. (*Cases 13, 17.*) On the other hand, every physician must have met with cases of severe and long continued pains in various parts of the chest, sometimes fixed, sometimes erratic, which, although very distressing to the patient, appear to have no ill effect on his general health, and in fact to be unconnected with organic disease. A gentleman who had for a length of time been harassed in this way, came to Philadelphia and consulted me respecting his situation. In a very few days thereafter, and before any treatment had been adopted, he had a hemorrhage from the lungs, of two or three ounces of florid blood. He was much alarmed and disappointed at this occurrence, believing it to be a precursor of consumption. But to our mutual surprise he soon recovered his health to a degree he had not enjoyed for a very long time; his pain almost wholly left him, and has never since recurred with any degree of severity, nor has he had any return of haemoptysis, although six years have now elapsed.

Pains in the epigastric region, and in various other parts of the abdominal cavity, are common, but I do not know that any of them possess a specific character.

Pain frequently attacks the lower portion of the bowels in the advanced stage of phthisis: it is at first paroxysmal and severe, and is mostly followed and relieved by alvine evacuations; but the distress soon becomes more constant, and is the precursor of a diarrhoea that sooner

or later becomes uncontrollable. This abdominal pain is occasionally restricted to the right iliac region, which is explained by the proneness of the large intestine, near its valve, to inflammation and ulcer.

I have met with three instances in which the patients complained of intolerable pain in the legs;* in one of these cases there was extensive ulceration of the intestines; in the other two the latter organs were not examined.

EXPECTORATION.

In addition to what will be hereafter said (*Contents of abscesses*,) it may here be remarked, that the sputa in phthisis often afford an extremely fallacious diagnostic: for the fluids of the bronchia vary with the various diseases of those tubes, which moreover have the power of secreting genuine pus. Again, the purulent matter of pulmonary cavities is necessarily mingled with bronchial mucus; and every attempt to distinguish them unequivocally, has thus far proved fruitless.

M. Andral has justly observed, that pus and mucus often pass into each other by insensible shades, so that no precise distinctive characters can be drawn between them.

During the incipient stage of consumption, the expectoration is variable and equivocal; it is sometimes composed of frothy saliva, mixed with a flaky substance of a yellow colour and preternatural consistence: in other instances

* I may remark, in passing, that a gentleman whom I lately attended with a violent and fatal attack of enteritis, often assured me that the pain in his bowels was bearable compared to that in his feet and legs. An autopsy revealed extensive ulceration throughout the large intestine.

ces the secretion is of a more mucous character, with opaque, whitish,ropy streaks.* In the progress of disease, the sputa become more decidedly puriform, and in conjunction with the physical signs of phthisis, leave no doubt of the nature of the malady.

When the expectorated matter is of a uniform, delicate pink colour, and continues of this character (though perhaps with considerable intermissions) for a considerable length of time, I have always found it, as heretofore stated, connected with abscess.

There can be no question that the dark, and even black streaks in the sputa of the second stage of phthisis, are sometimes derived from the black pigment of the lungs, which, being surrounded in the secretion of tubercular matter, Pl. II, fig. 3, is eventually expectorated. In other instances the intestinal cellular membrane of the lungs assumes a blackish tint, in the progress of suppuration, (just as the same tissue does in some abscesses, and especially in anthrax) and is coughed up with the fluids of pulmonary cavities.

* *Martinet. Pathologie.* The following summary, from the same author, of the appearances of the expectoration in various diseases of the chest, is so concise and graphic, that I am glad to insert it in this place.

If the expectorated matter is clear and viscid, it denotes *acute catarrh*; if it subsequently becomes opaque, thick and yellow, it is the result of *chronic catarrh*: if it is tenacious, firmly adhering to the vessel into which it is received, and is at the same time streaked or coloured with blood, it indicates pneumonia; or if they are puriform, or streaked with white lines (as above described) and contain small whitish masses insoluble in water, they probably come from a tuberculous cavity in the lungs.

To this M. Martinet adds, that "if the expectoration is fluid, purulent, and coughed up suddenly and profusely, it leads us to suppose that a fluid contained in the pleura has made its way into the bronchia, and is thus evacuated." This, however, is incorrect as an exclusive diagnostic; for I have seen this phenomenon follow the bursting of a tuberculous abscess.

Calcareous and osseous concretions are sometimes coughed up with the expectorated fluids. These appearances lead us to suspect an abscess of the lung; but they are no proof of it; for such concretions are occasionally secreted in the bronchial tubes and are wholly independent of the pulmonary tissue. An example of a bronchial osseous concretion is mentioned in Case 12, though it was not discovered until after death. When similar or different bodies are secreted in tuberculous lungs, (as often happens) they generally become isolated, in the progress of suppuration, in the surrounding tissues, pass into the bronchia and are coughed up.

Consumptive persons also frequently expectorate small rice-like bodies, of a whitish opaque colour, and of a caseous hardness. These substances are in some instances real tubercular matter, excreted from the parietes of abscesses: but in many cases they are derived from the follicles or cryptæ of the mucous membrane lining the larger air tubes,* while the pulmonary structure may remain unimpaired.

It is sometimes observed, that persons who have lain in one position for several hours without expectoration, find it become profuse on turning on the opposite side; which is obviously owing to the accumulated secretions of an abscess flowing, by mere gravity, into the bronchia, on the patient changing his position.

* Dr. Quain proposes a method of ascertaining the precise origin of these substances, viz. by placing them on a piece of paper and exposing them to heat. "If they are merely sebaceous matter from the mucous cryptæ in the fauces and pharynx, they will leave on the paper a greasy stain, which effect will not be produced if they are tubercular matter from the lungs."

ABSCESS.

As tubercular disease approaches to suppuration, the hectic fever, languor, and general febrile symptoms become aggravated, and the patient is restless and oppressed, especially at night. During this period the secretions of the bronchia are extremely variable, and I have met with cases in which the cough was so slight as to occasion no inconvenience. In progress of time the fever is accompanied by distinct chills, and sooner or later a sudden expectoration takes place, often copious, but modified in this respect by the size of the tuberculous mass. This expectoration consists of tubercular matter floating in pus, and may be compared, in familiar language, to cheese grated in cream. This appearance is decisive of tuberculous disease, and leaves no doubt of the series of symptoms that is likely to follow. After an abscess has thus commenced suppuration, the fever sometimes abates; the distress and restlessness diminish, and the patient seems altogether better excepting in his cough, which, for the first few days at least, is apt to be troublesome. After the caseous expectoration has continued for some time, it is followed by a more fluid matter of a muco-purulent nature, which is obviously derived from the mixed secretions of the bronchia, and the abscess itself.

In other instances, even where the precursory symptoms of abscess have been very active, the suppuration is wholly disproportionate; a circumstance that is generally attributable to the conjoined irritation of a number of small, disseminated tuberculous masses.

HECTIC FEVER.

This mostly appears in diurnal paroxysms, commencing towards evening, and lasting the greater part of the night, when it goes off in colliquative perspiration.

The accession of hectic resembles that of intermittent fever, and, like the latter, it has three stages. The cold stage is accompanied by pains in the limbs, contracted features, partial lividness of the skin, and irritable stomach. Fever follows, with a circumscribed red spot in one or both cheeks, (called emphatically the *hectic flush*,) a dry, hot skin, thirst, dyspnœa, restlessness and languor, but without headache; or at most with very little. Then succeeds the colliquative perspiration, or night-sweat: and hour after hour the patient is deluged with the cutaneous secretion, leaving him nervous and exhausted. These three stages of fever, each so different from the others, and each in turn racking the frame by contrasted violence, rapidly reduce the strength and undermine vitality.

It sometimes happens that patients have two such paroxysms in the twenty-four hours, one in the morning, another at night; while others appear to be incessantly labouring with febrile irritation. Dr. Heberden's observation, that the pulse is constantly above ninety, is, as a general rule, correct: and during the exacerbations it usually rises to 120. As a very remarkable exception, I may cite the case of a man aged 39 years, admitted into the Almshouse Hospital in the winter of 1834-5, whose pulse was usually at 36 beats in the minute. This occurred during the hectic paroxysm, the force of the pulsa-

tions being then much increased. I never observed it more frequent, except on one occasion, when it rose to 60; but the resident physicians informed me that they had observed his pulse to be variable, and sometimes intermittent.

I have sometimes noticed the fever to continue for several days without intermission, and then to be absent for a nearly similar period; and it is remarkable that during these protracted febrile paroxysms the intellect is mostly unimpaired, and the head free from pain: or, if delirium does supervene, it is light and transient.

Other instances occur in which phthisis passes through all its phases with scarcely any hectic symptoms; and I have repeatedly noticed that where the fever has been severe and the diaphoresis in proportion, the latter has disappeared towards the termination of the disease, although the hectic continued unabated.

Nor have the cases of exemption been those in which no cavity existed in the lungs, as might be imagined by pathologists who maintain hectic fever to be occasioned by an absorption of pus. On the contrary, examples of the almost total absence of this fever have occurred where the abscesses were large and of long duration: while in others in whom the hectic has been severe, a post-mortem examination has revealed the fact, that not a single tubercle had gone into suppuration.

An obscure but certain indication of hectic, is almost invariably observed in a dry, burning sensation in the palms of the hands and soles of the feet; in some instances confined to the former, in others to the latter, and even

extending to the elbow or the knee, or to parts of the body itself. I have met with a solitary case in which this sensation was confined to the top of the right foot, recurring for several hours diurnally; the patient compared the sensation to that produced by pouring hot water on the skin. In another remarkable instance, the burning in the hands and feet is synchronous with a full inflation of the lungs; yet during moderate respiration, the symptom in question is very inconsiderable, and often absent.*

DIARRHœA AND VOMITING.

In some rare cases diarrhœa commences very early in the disease, even among the initiatory symptoms, and, recurring by paroxysms, terminates only with life. I have at this time a consumptive patient in my care who was attacked seven months ago with profuse diarrhœa, which lasted eight days, and was at length checked by opiates: it has recurred twice since, but by the timely interposition of medicine has been removed without difficulty. The neglect of this symptom involves fatal consequences.

In a majority of consumptives the immediate cause of death is diarrhœa; which, supervening on an exhausted constitution, terminates life in a very few days, sometimes in a few hours.

The usual cause of the colliquative diarrhœa of phthisis, is ulceration of the coats of the intestines, either in the lower part of the small intestine, in the colon (especially

* The *irritatio venerea*, so common in phthisis, results from a similar congestion, or local hyperæmia, of the genital organs.

near its valve,) or in the pouch of the rectum. In other instances this symptom arises from a disorganised and softened state of the mucous membrane, which is reduced to a consistence but little firmer than mucilage.

In some instances, however, the diarrhœa which occurs for the first time in the last days of consumption, appears to be owing simply to that complete inaction which the intestines suffer, in common with other organs towards the close of life.

It is commonly observed that the occurrence of diarrhœa suspends or diminishes the cough; but the one is no sooner arrested, than the other returns: this is, however, no reason for allowing the diarrhœa to continue; inasmuch as it is much more exhausting than the cough itself.

Connected with the diarrhœa there is often an extremely irritable stomach, that rejects all *ingesta* excepting those of the simplest nature. Post mortem examinations show that this symptom results from inflammation of the mucous coat of the stomach; and in one instance, where the patient was much harassed by vomiting, I found a considerable ulcer near the pylorus. (*Case 31.*)

There is sometimes vomiting directly after a paroxysm of cough, and more especially after eating: this symptom, taken in conjunction with other indications, was considered by Dr. Richard Morton to be characteristic of phthisis.

Dr. Wilson Philip has described what he calls a *species* of consumption by the name of *dyspeptic phthisis*, which he supposes to be induced by a diseased state of the digestive organs; but practical pathology has decided, that

in a great majority of cases, the gastric is a consequence of the pulmonary affection.

ŒDEMA.

The feet often swell in the advanced stage of phthisis, but the effusion is mostly confined to the extremities, and disappears before death. I have rarely observed this complication to augment so much as to distress the patient; a fact which Bichat has accounted for in the colligative perspiration so common in this disease. Ascites and idiopathic hydrothorax are also infrequent; but I need scarcely repeat, that effusion into the pleura, from perforation or from inflammation of that membrane, is of familiar occurrence.

EMACIATION.

This is an almost invariable attendant of phthisis; and where it is extreme, and accompanied by febricula, we may reasonably suspect a pulmonary affection. I have, however, known several patients with tuberculous abscesses to retain their full habit almost unimpaired: among the most remarkable of these was the late high constable G. of this city, a man of such gigantic frame and general obesity, that nothing but the unequivocal evidence of the stethoscope, convinced me of his actual condition. A few days before his death, at the request of his physician, Dr. Parrish, I applied the instrument, and detected a large abscess just beneath the clavicle of the right side. The subsequent autopsy, by Dr. I. Parrish and myself, verified this observation, and showed the

lung of the same side to contain myriads of tubercles in every stage of development. The left lung was also tuberculous, but much less advanced in disease. Yet I do not recollect ever to have examined a subject more loaded with fat, which, over the thorax, was an inch in thickness; and although his disease had continued for many months, with almost daily haemoptysis during the latter part of the time, there was very little obvious emaciation.

INCURVATURE OF THE NAILS.

This accompaniment of phthisis was observed in remote antiquity: it is sometimes strongly marked; each nail, instead of the usual convexity, presenting one or more concave surfaces or depressions. It is most obvious in persons whose general dermoid structure is of a delicate and irritable character, and in such occurs not only in phthisis, but under any circumstances that exhaust the strength for a lengthened period. A gentleman, who spent a winter in the West Indies, and who had impaired his health by various indiscretions, called my attention to this state of his finger nails, which he noticed for the first time while in the tropics: yet he had been but a short time in a nothern climate, (where his health became more robust,) when this peculiarity wholly disappeared.*

ALTERATIONS OF VOICE.

The voice mostly alters in the second stage of phthisis,

* Among the dermoid characteristics of a phthisical habit, M. Baumes mentions a deficiency of beard in males, and a general thinness of the hair in both sexes. *De la Phthisie Pulm.* t. i. p. 126.

becoming weaker and more or less hoarse or sibilant. These phenomena are generally in proportion to the inflammatory affection of the larynx, but may exist independently of it; which Bichat suggests may be owing to some derangement of the eighth pair of nerves. Again, extensive ulceration of the air-passages may exist without much alteration of voice, or inconvenience to the patient. (Case 31.)

So much for the ordinary symptoms of consumption: I shall conclude this part of my subject with the history of a case in which all these characteristics were absent.

CASE XIII.

Absence of the usual symptoms of phthisis:—a large tuberculous abscess, and both lungs filled with tubercles; which were also developed in most of the abdominal viscera. Monaco à Flores, a Spanish negro, aged twenty-seven years, of a tall but thin person, by trade a tailor, was admitted into the Philadelphia Almshouse hospital, September 6th, 1833. He stated that he was taken sick in the island of St. Thomas, West Indies, about a month previous, but that his indisposition consisted solely in debility: he declared that he had had no cough, difficult breathing, fever, pain or haemoptysis, and uniformly gave the same reply to the questions which were repeatedly put to him on these points. On his entrance into the ward none of these symptoms could be detected; and although he lived three days after admission, he was not observed to cough, or observed to expectorate. He breathed short, but without seeming pain; but he mostly sat with his legs bent under him, and his body leaning forward. His pulse was weak, frequent and tremulous; he had some appetite, but very little thirst. He lived until the 9th of September, and then died without apparent distress.

Autopsy by Drs. C. A. Porter and J. W. Paul. (An engagement prevented my personal attendance.)

Right lung crowded from the apex to the base with miliary tubercles, opaque but not softened: no vomicae.

Left lung filled with tubercles in the same manner, but also contained at the upper and posterior part of the superior lobe, an abscess the size of a hen's egg, which again communicated with several smaller ones.

No fluid in either pleura.

Bronchial glands much tumefied.

The *liver, spleen, kidneys* and *mesenteric glands* tuberculous, the latter organs being monstrously enlarged.

Peritoneum covered with tubercles, with interspersed specks of melanotic matter.

Brain healthy.

Remarks.—The lungs, (one of which I inspected subsequent to the autopsy,) were so completely charged with miliary tubercles, that I do not hesitate to say that not a quarter of a cubic inch of parenchyma, in any one place, was free from them. Can it be possible that all this dis-organisation was throughout unattended by fever, cough, expectoration or pain? Such was the patient's repeated asseveration; and during his short sojourn in the institution, every circumstance confirmed his statement. He appeared to live until the accumulation of tuberculous matter prevented the oxygenation of the blood.

STATE OF THE MIND.

In a great majority of instances, consumptive persons preserve an equanimity of mind, and an insensibility to danger, which have become a proverb: whence Dr. Good adds to his specific characters of phthisis—"delusive hope of recovery." This circumstance is chiefly to be attributed to the usual absence of bodily suffering, even while the disease is making frightful ravages: nor need we be surprised at the want of apprehension in those, who

experience few or none of the ordinary manifestations of danger.

Yet this apathy often continues to the last moment of life, and the patient, with buoyant spirits, looks forward with pleasing anticipations of health and enjoyment, at the moment when the hand of death is already upon him. Providence draws a veil between man and his destiny. “*Ignoratio futurorum malorum melius est quam scientia.*”

An impressive instance of this kind lately occurred to me. A young man who had been under my care for some months with a most undisguised consumption, who had been exhausted by frightful haemoptysis, and with all the usual symptoms, had a large abscess in one of his lungs, tottered into my house to ask further advice: but he prefaced his remarks by declaring his conviction that his lungs were perfectly sound, and that he only required a little more fortitude for the proper regulation of his diet, in order to attain a perfect restoration to health! He survived but a few months.

While the hectic paroxysm is acute, we often see the mind give way under the pressure of disease; but no sooner does the fever pass off, than the spirits resume their wonted elasticity.

I have occasionally met with instances in which a degree of mental derangement preceded the close of consumption. In one of these the alienation lasted nearly a week, during which time the patient, a young man, scarcely ever recognised or regarded his nearest relatives; but two or three days previous to dissolution his faculties were

restored, and remained unimpaired almost to the moment of his death.

I have already alluded to five cases of tubercular consumption in lunatics. Dr. Rush* mentions that he had observed two cases in which madness alternated with phthisis; the cough and expectoration being wholly suspended during the derangement of mind. This interesting fact did not escape the scrutiny of Hippocrates, who remarks that those patients whose sputa become suppressed, are liable to delirious ravings.†

Such are the appearances which characterise this formidable disease. As death approaches their intensity increases, until man appears as a breathing skeleton, and beauty is transformed into the ghastly personification of death. The emaciation becomes extreme, the face livid, the lips pale, the bones projecting, the eyes bright, the motions feeble, the utterance reduced to a whisper, deglutition painful, digestion imperfect, the skin alternately flushed with fever or deluged with perspiration, the bowels irritable, and the pulse weak, rapid and fluttering.‡ What, indeed, can be more graphic, and yet more melancholy, than the vivid description of Aretæus, the Cappadocian? "The cheek bones," says he "are prominent and diffused with hectic redness; the eyes are hollow and glittering; the countenance is pallid, or of a leaden hue, and owing to the contraction of the muscles, appears as if smiling: the flesh melts away, the joints alone appearing preternaturally

* Med. Inq. and Obs. vol. ii. p. 66.

† Prænot. 259.

‡ De Causis et Sig. Morb. etc.

large; thus the spine projects from the vertebræ, and the scapular bones may be compared to wings."*

* The multitudes of vermin, sometimes observed, are consequent to neglect of cleanliness in the lower classes of society. In a solitary case I have observed an insufferable fetid exhalation from the skin, wholly unconnected with the breath. I at first suspected the latter, and thought the lung had become gangrenous: but the fetor has now continued nearly eight months, and is obviously a dermoid effluvium.

CHAPTER VI.

SIGNS OF PHthisis DERIVED FROM PERCUSSION AND AUSCULTATION.

PERCUSSION.

WHEN the chest of a healthy person is quickly and firmly struck with the ends of the fingers, a peculiar tympanitic sound is produced; if a thin plate of ivory (called a pleximeter) be interposed between the fingers and integuments, the effect is more clearly and equally obtained. This mode of diagnosis, which is as old as Hippocrates, though of later years revived by Dr. Avenbrugger, is by no means an infallible guide in phthisis, but is an adjuvant of great value, and should never be omitted.

In applying the pleximeter, the two following rules are necessary to be observed:

1. Be particular to place it at precisely the same points or opposite sides of the chest; otherwise the comparison deduced from it will be fallacious.
2. Use, as near as may be, an equal force of percussion to all parts of the thorax.

If from any cause, a portion of a lung has lost its vesicular structure, the resonance, or tympanitic sound, will be diminished in proportion: thus, if we strike the thorax beneath the clavicle in a patient whose lung is solidified by tubercular matter, or his pleura charged with effused

fluids, instead of the natural resonance the sound is dull, and flat, like that obtained from a fleshy part of the body. There is, also, when the tuberculous matter begins to soften, a peculiar sound sometimes obtained, like that from striking a cracked earthen vessel.* With these indications the stethoscope should be resorted to as a more accurate means of diagnosis.

Percussion, however simple at first thought, is constantly liable to the following fallacies:

1. Where tubercles are few and disseminated, and especially where the two lungs are equally affected, I believe it impossible to detect them in this way.

2. When pneumothorax has taken place, (*Case 17,*) the diseased side will be much more resonant than in health; but this circumstance is readily detected by the stethoscope; for the respiratory sounds will be deficient in proportion as the lung is compressed by air.

3. Where a large abscess exists in the apex of the lung, the proximate part of the thorax will sometimes yield a preternaturally sonorous sound, more allied to healthy resonance than the sound of pneumothorax: but here again the stethoscope solves the doubt by detecting the cavernous respiration, gurgling, &c.

Fluids effused in the pleura, old and extensive pleuritic adhesions, emphysema of the lungs, together with some minor lesions, are also causes of fallacy in the use of the pleximeter, and require the aid of another instrument.

Bruit de pot fêlé. The most striking illustration of this sound that ever occurred to me, proved to have resulted from compression of the lung at the top of the chest, in consequence of a copious effusion in pleurisy.

AUSCULTATION.

The Stethoscope, with which I first became acquainted at the clinical lectures of Dr. Laennec,* its celebrated inventor, is certainly among the most important acquisitions to modern medical art. To assert that, by its aid, we can distinguish *all* the minute morbid conditions to which the lungs are subject, is more than my experience will sanction: but that it is an unequivocal resource in all considerable lesions of these organs, and especially in those attendant on consumption, there can be no doubt. In this, as in most other instances in our art, skill is the offspring of experience; and it would be unwise and unreasonable in the learner to charge his errors to the instrument. The stethoscope requires great and persevering attention; and if even with these pre-requisites, its results sometimes appear or prove ambiguous, it only shares the misfortune of almost every individual means of diagnosis with which we are acquainted.

In forming a judgment, therefore, in diseases of the lungs, the physician should avail himself of every avenue to information—percussion, stethoscopic signs, and the history of the symptoms, both as detailed by the patient himself, and manifest to observation.

The standard of healthy respiration, can only be obtained by applying the ear† or instrument to the chest of a healthy person: the operator then distinctly hears the

* Hospital Necker, Paris, 1821-22.

† Direct auscultation by the application of the ear to the chest, is most satisfactory in its results.

sonorous inflation of the air-cells at every inspiration, which may be compared to the whispering sound obtained by drawing one's breath with the lips nearly closed.* If this result is obtained unimpaired, and in equal degree, over the different regions of both sides of the chest (allowing, of course, for the greater thickness of the integuments, &c. over some parts than others,) we may augur favourably for the soundness of the lungs. This important inference, however, should never be drawn until after patient and repeated auscultation in a perfectly quiet apartment; for it not unfrequently happens, that owing to simple mucous obstruction the respiratory sounds are temporarily impeded, conveying to the ear an ominous deficiency; but the re-application of the instrument, after an interval of a few hours, will often enable us to detect the cause, inasmuch as the signs in question may have totally disappeared.

Bearing in mind that, in forty-nine cases out of fifty, the superior lobes of the lungs are the chief seat of tuberculous disorganisation, our scrutiny is of course to be first directed to these parts.

FIRST STAGE OF PHTHISIS.

The physical signs of incipient phthisis are often very obscure; for when the tubercles are few in number, and dispersed through an otherwise sound lung, they cannot appreciably affect the vesicular respiration; nor do I believe that any mode of diagnosis with which we are acquainted, can detect them under such circumstances.

* *Pulmonary Respiration* of Laennec. *Vesicular Respiration* of Andral.

When, however, tubercles are numerous, or aggregated, or when tuberculous matter has infiltrated the parenchyma, there necessarily follows a dull or diminished respiration; in fact it is observed to be imperfect in some places, obsolete in others, and again full and sonorous. These phenomena, if repeatedly obtained from the superior lobes, in conjunction with more or less obscurity on percussion, leave scarcely a doubt of tuberculous disease.

This stage of phthisis, when fully developed, is often accompanied by *bronchial respiration*. This sound results from a more or less complete accumulation of tuberculous matter around the air cells, by which they become compressed and impermeable; respiration is consequently restricted to the bronchial tubes, and is distinct in proportion as these are near the surface of the chest. Bronchial respiration has been compared to the sound produced by blowing through a crow's quill. It is usually most perfect in the second or hepatised stage of pneumonia, but is also frequent and well marked in tuberculous disease. It is in this state of the lung that *bronchophony* is also heard, a phenomenon dependent on the resonance of the voice in the bronchial tubes. "The voice does not, as in pectoriloquy, appear to enter the tube of the instrument; and the sound of the voice is not heard in distinct words, but in notes of various continuance, not always synchronous with the words uttered by the mouth; and the intervals are often alternated with what may be called whiffs of bronchial respiration."* It must

* WILLIAMS, Rational Expos. p. 96.

be acknowledged, however, that it is often difficult to distinguish between bronchophony and imperfect pectoriloquy. The prolonged *expiration* has of late been adduced as an additional evidence of tuberculous disease. This sign was first observed by the late lamented Dr. James Jackson, Jr. of Boston; nor can I do better than quote his own words: "In some commencing cases of phthisis, when the respiration is not yet truly bronchial under the clavicle; when we still hear the vesicular expansion, and nought else on *inspiration*, I have discovered the bronchial sound on *expiration*. In other words, as the tuberculous deposit advances, the bronchial *expiration* may be heard before the bronchial *inspiration*."^{*} To the sounds above mentioned, may be added various modifications of the mucous and sibilant forms of respiration, owing to an inflamed state of the bronchial membrane, morbid secretions, &c.

Dr. Gerhard states that "a new sign of much importance is often observed when tubercles are in considerable number, and is sometimes present at a very early period of the disease. It is the greater loudness of the sound of the heart opposite to the tubercles, which serve as a better conducting medium than the spongy tissue of the lungs. If the tubercles are most numerous in the right lung, the pulsations of the heart are heard more distinctly there than at the corresponding part of the left, and we then infer, with great certainty, that the lungs are indurated."[†]

* See a Memoir of James Jackson, Jr. M. D. p. 129, &c.

† Diagnosis, &c. p. 108.

I have not yet been able, from personal observation, to verify this diagnostic, but it is obviously a valuable one.

Phthisis is not generally stationary for any considerable period; and the comparative obscurity of its first stage, is sooner or later changed for a series of phenomena which sound in the ear with a frightful precision.

SECOND STAGE.

In this stage of the disease the bronchial respiration is much more strongly marked, and the blowing respiration, which is a modification of the bronchial, becomes also very distinct. The patient seems to draw the air from the ear of the observer through the stethoscope, and blow it back again with force during expiration. Some or all of the following additional signs, become sooner or later manifest.

Cavernous Respiration.—When the tuberculous matter has softened and made its way into the bronchia, an open abscess is necessarily formed: this change is for the most part readily detected by the ear; for the air can be heard to enter the cavity at every inspiration, and especially if the patient should cough.

Amphoric Respiration.—When the cavity is large and the bronchial tubes opening into it are small, the air enters with an audible puffing sound, which has been aptly compared to blowing into an empty bottle.

Gurgling Respiration.—When the cavity contains considerable fluid with which the bronchia communicate freely, a gurgling sound is produced, not unlike that obtained by blowing gently into one end of a tube, while

the other is immersed in a phial of water. This is the *gargouillement* of the French; it sometimes exists to such a degree, that there is no exaggeration in illustrating it by supposing a bellows to be used in place of the glass tube.

It must, however, be conceded, that an abscess may and occasionally does exist, without our being able to detect any one of the preceding phenomena. This may happen when there is such a total destruction of the pulmonary structure, complicated with adhesions, as to cause complete immobility of that portion of the thorax in which the cavity is situated, and suspend respiration of every kind. I have at this time in my charge a medical gentleman in whom this observation is strikingly verified: the superior third of the left side of his chest takes on no action during respiration; and no sounds are heard in the part, although there is unequivocal evidence of a very large abscess.

Pectoriloquy.—This name has been given by Laennec to a singular phenomenon which can only result from an abscess in the lung. Thus, if a cavity is situated near the surface, and at the same time communicates freely with the bronchia, every word the patient utters appears to traverse the stethoscope, and is conveyed to the ear of the operator as distinctly, in many instances, as the sound of the voice in conversation: such is *perfect pectoriloquy*. It is necessary, however, for the production of this phenomenon, that the cavity should be empty, or nearly so; and the more circumscribed the better. When however, the cavity is very irregular or deep-seated, or has not free communication with the bronchial tubes, a

modification of pectoriloquy is heard, called *imperfect*, because the sound of the voice appears to remain at the end of the stethoscope, not unlike the words of a person who speaks through a partition. Perfect pectoriloquy is an unequivocal proof of an abscess in the lung; though the existence of dense adhesions, the effusion of water into the pleura, and other causes, may prevent pectoriloquy from being heard; or at least render it obscure and doubtful, even where abscesses are evident from the other physical signs already noticed.

Pectoriloquy is most distinct in persons who have sharp voices; but is extremely variable in the same individual; for example, where the expectoration has been retained for a considerable time anterior to the application of the stethoscope, the pectoriloquy will be obscure, or wholly deficient; and vice versa. Again, there may be a large cavity without pectoriloquy, owing to the smallness of the bronchial tubes that communicate with it.

METALIC TINKLING.

This is a remarkable sound, occasioned by the existence of a large abscess filled with air and fluids, and communicating with the bronchia: it is chiefly heard when the patient speaks or coughs. It derives its name from a similarity in sound to that produced by striking a metallic vessel, or glass cup, with any small, firm substance, as with the point of a knife. It has also been compared to the dropping of grains of sand into a glass vase. It is not peculiar to tuberculous abscesses, but occurs also in pneumo-thorax conjoined with effusion.

It would be foreign to my present purpose to describe the various results yielded by the stethoscope in the many complications of phthisis: for details of this kind (which embrace the whole history of pulmonary auscultation.) I must refer the reader to other sources: * but I may repeat, that the physician should never be satisfied with a single application of the instrument, but persist in its use at least once a day for several successive days; and remember that there is an obvious advantage even in varying the hours of such examination.

* *LAENNEC, passim.*

A Rational Exposition of the Physical Signs of the Diseases of the Lungs and pleura. By C. J. B. WILLIAMS, M. D. p. 175, &c.

On the Diagnosis of Diseases of the Chest. By W. W. GERHARD, M. D. p. 105, &c.

CHAPTER VII.

ON THE COMPLICATIONS OF CONSUMPTION WITH OTHER DISEASES.

FISTULA IN ANO.

IT has long been supposed that this affection has some connection with the phthisical diathesis, and the remark has been so often made by observing practitioners, as to deserve attention.* I have met with seven cases, in most of which fistula supervened so directly on the pulmonary symptoms, and so kept pace with them, that I could scarcely consider its presence an accidental coincidence.

CASE XIV.

Phthisis with fistula in ano; termination in hemorrhagic pleurisy.—E. M., a mulatto shingle-dresser, aged forty, was admitted into the surgical ward of the Alms-house hospital, May 28th, 1832, with fistula in ano, and a dry cough. After remaining for several months in the surgical ward, he was finally transferred to the medical ward with confirmed phthisis, a few days before my term of attendance expired. The man was of a meagre person, sharp face and narrow chest: he informed me that his cough followed soon after the fistula; that he had never had hæmoptysis, and very little pain in any part of the chest. The resident physician who had charge of this man when in the surgical ward, assured me that whenever the fistulous discharge diminished, whether from natural or artificial causes, the

* Baumes, *Sur la Phthisie*, t. i. p. 456.

cough and other pulmonary symptoms were greatly aggravated, and *vice versa*: and that he had hectic fever and night-sweats, but both in moderate degree. He had eventually considerable pain in the chest, oppression and diarrhoea, and died rather suddenly, May 30th, 1833.

Autopsy, assisted by Drs. C. A. Porter, Bacon, Peace, and Thornton, twelve hours after death. Extreme emaciation.

Right lung adherent in patches; a large empty cavity in the apex; around the cavity the whole superior, and more than half of the middle lobe, were solidified by a vast aggregation of miliary tubercles, disposed in irregular masses, some of a light greenish colour, others of a clear red; the former contained small vomiceæ; when examined by reflected light, the miliary, tubercular structure of both masses was distinctly seen. (Pl. I. fig. 2.) The bronchia were rapidly disappearing, each remaining tube presenting a mere *cul de sac*.

Left lung firmly adherent by large patches of false membranes, formed of many laminæ, between which, over the upper and anterior part of the lung, was effused about half an ounce of dark, venous-looking blood. The upper lobe had a cavity the size of a hen's egg (being nearly twice the size of that of the opposite side,) partially occupied by fluid pus and soft caseous matter. The remainder of the superior lobe was replaced by tubercular structure, precisely like that just described.

The lower lobe contained a few tubercles, and some osseous and calcareous concretions.

Bronchial mucous membrane inflamed and ulcerated throughout: and the *bronchial glands* were greatly enlarged, and charged with osseous masses the size of a small pea, together with larger calcareous nodules. (Pl. XII. fig. 2.)

Heart small and firm.

Liver nearly natural.

The external orifice of the fistula commenced an inch in advance of the anus, and extended nearly twice that distance into the perineum: the heat of the weather prevented a more specific examination of it.

Remarks.—The blood effused between the false membranes in the preceding case, forms the *hemorrhagic pleu-*

risy of Laennec. In this modification of disease, it is rare to meet with so much coagulated blood, in place of which we commonly observe serum with more or less of sanguineous colour. The laminæ of false membranes were evidently chronic; but the effusion of blood was owing to the supervention of acute pleurisy.

Of the six other instances of fistula in ano, that have come under my care, I have preserved the following memoranda:

2. A fireman, of delicate frame and dark bilious complexion, during great exertions in working an engine, was seized with profuse hæmoptysis, which symptom was soon followed by all the others that characterise phthisis, including anal fistula: this increased with the progress of the disease; though the one was not obviously influenced by the other. The patient died at the end of four months, but I could not obtain permission to examine his body.

3. A literary gentleman of a meagre person, and extremely dark and sallow complexion, was taken with chills and fever that resisted all tonic remedies; when he consulted me I suspected his paroxysms to be hectic, and was confirmed in the opinion by the sudden appearance of a fistula: his symptoms soon assumed every character of phthisis, and he died from home about six months after the accession of disease.

4. A young man of the sanguineous temperament, who pursued his medical studies with me in the year 1832, consulted me for a disease of the rectum, which proved to be fistula, and opened externally about an inch from the anus. He had cough, slight fever, pain, at times severe, in the

middle sternal region, though the expectoration was inconsiderable. I applied an issue to his chest, advised some internal remedies, and advised him to remove for a few months to the country. He did so, and seemed to be fast regaining his health; when suddenly, during an injudicious exertion of strength, a profuse hæmoptysis came on and reduced him extremely. He returned immediately to the city (April, 1833,) with every symptom of confirmed phthisis; but the fistula had entirely disappeared three months before, nor had he, on his return, any remains of it. He chose, on his own responsibility, to sail for Europe (for in his desperate situation I could not advise such an alternative,) and survived his voyage about six months.

5. Dr. G. B. T. of this city, with dark hair and sallow complexion, was attacked, March, 1834, with anal fistula, was five times operated on, and finally cured of the disease in December of the same year. Very soon after, he was seized with a violent and intractable bronchitis, which terminated in decided consumption. When I saw him, October, 1836, his fistula had not recurred, but he had a large abscess in the superior part of the left lung. This gentleman dated his pulmonary affection from the time his fistula healed.

6. A clergyman now resident in this city, was attacked nearly two years ago with symptoms which threatened consumption. Meanwhile a fistula opened near the anus, and his general health became much impaired. He sailed for Europe, was there operated on for the fistula, and returned home much better. The fistulous disease, however, though often relieved, has never left him entirely;

more recently it has re-appeared in the perineum, and still continues open, although I attempted its cure by an operation during the past summer. This gentleman's pulmonary affection has almost entirely disappeared; and I cannot but think that it is kept at bay by the fistulous discharge, which, if cured, would be probably followed by a recurrence of the pulmonary disease.

7. The remaining example of this complication has been already detailed. (*Case 4, A.*)

Laennec mentions that he seldom met with this complication of phthisis, and where it did exist, he could not observe that it had any influence over the pulmonary affection. Andral has arrived at the same conclusion; he having met with but a solitary case among eight hundred patients.

DISPOSITION OF THE BRONCHIA.

In proportion as tubercular matter is secreted, and the air-cells destroyed, the bronchial tubes become useless, and are rapidly absorbed. (Pl. I. fig. 2.) In this way they all disappear, excepting a comparatively few trunks, which, communicating with the abscesses, become fistulous canals for the conveyance of pus.* Such canals, however, do not retain their original healthy aspect; on the contrary, their cartilages are absorbed, and nothing remains but an altered mucous or fibro-mucous membrane.

* "Dans aucun cas nous n'avons rencontré de ramifications bronchiques à l'intérieur des cavités tuberculeuses, où dans les masses de substance grise demi-transparente; en sorte que le premier effet du développement de cette matière paraît être, comme l'a remarqué M. Laennec, la destruction des bronches dans la partie où il a lieu."—LOUIS, *Rech.* p. 36.

Inflammation of the bronchia has been noticed in the preliminary chapter, together with its influence in the development of tubercles.

There is, however, a morbid state of the air-tubes, in which their canals become greatly enlarged; it is called *dilatation of the bronchia* by Laennec, who was the first to describe it. The following example, which is the most striking that has fallen under my notice, will serve to illustrate this singular disease.

CASE XV.

Phthisis with dilatation of the bronchia, hepatisation, and melanosis.—T. C., aged thirty-nine years, dark hair, sallow complexion, sharp face, and meagre person, was received in the men's medical ward of the Almshouse, in March, 1833, with erysipelas of the face, occasioned by a blister applied by himself to relieve pain in the head. The erysipelas was obstinate, and terminated in typhoid bronchitis, with erratic pain in the chest, and scanty but purulent expectoration: to the last two symptoms he had long been subject. He lingered for about three weeks, and died the 6th of April. He had been for some months a pauper in the house, but not known to be phthisical.

Autopsy, assisted by Dr. Simpson, and Mr. (now Dr.) Arrott, twenty hours after death.

Left Lung. Adherent by slight false membranes. The superior lobe was tuberculous, partially hepatised, and contained an encysted concretion, intermediate between tuberculous and calcareous matter; around the cyst were also some tuberculoid granulations, and a considerable deposit of melanotic matter, arranged somewhat in a radiated form. It was also collected in an amorphous mass near the pleura, and disseminated in various parts of the adjacent disorganised tissue. (Pl. III. fig. 2.) In the inferior lobe was a series of monstrously enlarged bronchia, connected by condensed pulmonary tissue. The membranous tubes were increased beyond the diameter of a crow-quill, and pressed upon the surrounding structure so as to destroy its elasticity, and gave it

the hardness and colour of hepatised lung.* When these dilated bronchia were cut transversely, the lung had the appearance of a honey-comb.

Right Lung. Strongly adherent: an abscess the size of a black-walnut near the apex, surrounded by tubercles and vomicæ. The inferior lobes were hepatised in patches, and tuberculous: the membranous bronchia slightly dilated.

The *mucous membrane of the cartilaginous bronchia* was throughout highly inflamed on both sides, and secreted puriform matter.

Heart and liver natural.

Stomach highly inflamed.

Remarks.—Laennec justly ascribes dilatation of the bronchia to chronic catarrh; in the preceding case, however, there are some collateral facts worth consideration. Of the several lesions, that of the bronchia was obviously the most chronic: and the tubercular disease was seemingly developed in proportion to the bronchial; may not the latter have excited the former? The pneumonia was merely in its second stage, and accidental; the bronchitis was acute, supervening on chronic. The patient may, therefore, be said to have died of typhoid pneumonia, with bronchitis.

The preceding case would rank with *the phthisis with melanosis*, of Bayle, who has attempted to distinguish this, his third species, from all other forms or complications of consumption: but his diagnostic is singularly vague, and embraces no other symptoms than those which characterise, more or less, all chronic pulmonary affections.

M. Bayle adds, that this form of disease usually occurs

* LAENNEC, L'Auscult. Med. t. i. p. 126.

in persons advanced in life and that it is rarely seen before the fifteenth year.*

DISPOSITION OF THE PLEURA.

It is obvious that pleurisy may either precede or follow phthisis; in the latter case it results from the approximation of the abscesses to the pleura, which is at once involved in the inflammation. Hence the pleuritic affection is generally in proportion to the development of the cavities, and it is a rare circumstance to find the latter without the former. Thus, when the pleuritis is long continued and violent, the pleuræ are attached by false membranes of a fibro-cartilaginous firmness and great thickness. (*Case 24.*) (Pl. IX.) Yet the reverse occasionally happens, as is proved by the following example.

CASE XVI.

Enormous excavation with scarcely any adhesions.—B. C., a labourer, aged thirty-five years, dark hair, sallow complexion, sharp features, and narrow chest, came under my care in the Philadelphia Almshouse hospital, February 1, 1833. Says he took cold in the month of December, 1831, followed by haemoptysis, almost constant pain in the upper sternal region, night-sweats and emaciation, under which symptoms he now labours.

February 10th. Night-sweats profuse, and slight diarrhœa.

February 14th. Pain all over the abdomen; diarrhœa increased; pulse frequent and tremulous; tongue with a yellowish brown fur. Applied the stethoscope for the first time, and found unequivocal cavernous respiration in the infra-clavian region of left side.

Symptoms continued to increase until the 20th; his voice then became hoarse and sibilant, his countenance hippocratic, and his tongue clean. He died on the 22d.

* *Recherches, t. i. p. 29.*

Autopsy, assisted by Drs. Mason and C. A. Porter, thirty-one hours after death. Emaciation extreme.

Right Lung. Numerous vomicæ in the upper lobe, and a cavity in the apex as large as a walnut. The inferior lobes were charged with disseminated tubercles, in all stages of development, some of them suppurating at the margin. (Pl. II. fig. 3.) A very few filamentous connections between the pleuræ.

Left Lung. Nearly the whole of the superior lobe was occupied by an irregular encysted abscess, capable of holding half a pint of fluid, and half full of thin, inodorous, straw-coloured pus. The superior parietes of this cavity were formed by little else than the pleura itself. No adhesions existed in the vicinity, but there were a few filaments considerably lower down. The lung itself was tuberculous almost to its base.

Heart natural.

Other organs not examined.

Remarks.—This case is an exception to an almost invariable rule. “Point d’adherences,” says M. Louis,* “point de grandes ni de moyennes excavations, le plus souvent même absence de toute espèce d’excavation: adhérances faibles et peu étendues, excavations ordinairement très petites, rarement d’une grande capacité; quelquefois absence d’excavation.”

PNEUMOTHORAX.

This complication may be complete or partial; the latter will mostly happen when the adhesions are numerous and firm. But if the serous effusion forming the origin of this disease be very protracted, there is reason to believe that the adhesions will disappear entirely, from the constant pressure and distension of the fluid. Thus we not unfrequently meet with cases in which the lung is

* *Recherches Sur la Phthisie*, p. 40.

greatly collapsed, leaving a considerable aeriform space between the two pleural-surfaces, while these are still connected by filamentous adhesions, that have become attenuated in proportion to the shrinking of the pulmonary mass.

CASE XVII.

Phthisis with pneumothorax, and complete destruction of one lung.—M. C., a female of short stature and meagre person, dark hair, sallow skin, was received into the Philadelphia Alms-house hospital, on the 8th of March, 1832. Has slight and not troublesome cough, hectic fever, anorexia, and muco-purulent expectoration in considerable quantity, but without effort or pain. Declares that she never has had pain in the chest, but complains of constant and excruciating pain in both lumbar regions. Has been in this situation for several years, but without haemoptysis, or much difficulty of breathing. Finally, from a sense of extreme exhaustion, together with the pain just mentioned, she could combat her symptoms no longer.

Percussion over every part of the left side of the thorax gave a sound so perfectly tympanitic, as to leave no doubt of aeriform effusion in the pleura, which was confirmed by the stethoscope, for no trace of respiration could be heard. The right lung afforded both pectoriloquy and cavernous respiration at the apex. In this hopeless condition, and without any apparent aggravation or diminution of the symptoms, the patient died suddenly on the 29th of April, about six weeks after admission.

Autopsy, assisted by Drs. Mickle and Howell, twenty-four hours after death.

On making an incision into the left cavity of the thorax, there was an audible escape of inodorous gas. On pursuing the dissection, the lung was found reduced to half the size of a fist, and attached by its root to the posterior parietes of the thorax. There were no adhesions between the pleuræ, and no traces of perforate lung. The pleura costalis was of a dull whitish colour, opaque, dry and much thickened: what remained of the pleura pulmonalis had a dirty brown tint. On cutting into the lung itself, it presented a granular tuberculous mass, almost as firm as cartilage, of a grayish

white colour, totally devoid of pulmonary tissue or bronchial tubes.

Right Lung. Superior lobe with a considerable patulous abscess and some vomicæ beneath the apex; the inferior lobe alone presented respiratory structure, but even this was interspersed with miliary tubercles.

Abdominal viscera not appreciably impaired, excepting the kidneys, which were hypertrophied, flabby, and of a dark grumous colour, but free from tubercles.

Remarks.—I have no doubt that in the foregoing case the pneumothorax was owing to a series of lesions—tuberculous abscess—perforation of the pleura—effusion,—collapse—and gradual aeriform transmutation of the fluid contained in the pleura. As the lung must, in consequence, have ceased its functions long before death, and had become permanently changed into an inert and semi-cartilaginous mass, the case is to be regarded as one of *spontaneous cure of phthisis*. For, from the recent characters of the disease of the *left* lung, it is probable the latter had not existed (at least in the purulent state) more than three months; whereas the right lung must have been collapsed a much longer period, probably for several years, or even from childhood, for the patient had no recollection of her first attack.

The disposition of the lung to collapse on itself, in cases of abscess, has led some authors to suggest the propriety of inducing this condition by artificial means, viz. by making an opening through the intercostal muscles. The lung would of course collapse, provided no adhesions existed; but the presence of these would preclude all advantage from the operation; and again, if in

place of a simple abscess the lung should be full of tubercles, the event would be yet more hopeless. It is obviously one of the most unpromising expedients, that human ingenuity has yet devised in this disease; nor should I have noticed it here, had it not absolutely been put in practice.*

CASE XVIII.

Phthisis with pneumothorax, followed by acute pleurisy, and terminating by sanguineous cerebral apoplexy.—T. E., a boatman, aged twenty-five years, light hair, florid complexion, and short well formed person, was brought to the Philadelphia Alms-house hospital on the 22d of March, 1833, under the following circumstances: he took a violent cold two months ago (in the depth of winter,) in consequence of exposure to the weather; a troublesome cough ensued, with fever, burning in the hands and feet, and night-perspiration. About a week ago was seized with violent pain beneath the left breast, which has increased every day since, and now constitutes *acute pleurisy*. The patient's face is red and livid by turns, the cough violent, the dyspnœa extreme, and the sitting posture the only one in which he can breathe. Bleeding from the arm, and cupping over the seat of pain, afforded considerable relief to his sufferings; but he died suddenly and unexpectedly, the evening of the day of his admission to the house.

Autopsy, assisted by Drs. Betton and Goddard.

Right lung adhered almost every where, and was tuberculous throughout: beneath the apex, and occupying most of the superior lobe, were several large communicating abscesses. No effusion.

Left lung. On opening the pleura, it was found in a state of complete pneumothorax, the contained air compressing the lung to about one fourth of its natural size: from the proximate margins of the sulcus between the lobes, anteriorly, two funicular adhesions were given off, one from the superior, the other from the inferior lobe; these cords were upwards of an inch in length, flattened, and nearly half an inch broad; they were composed of a delicate, transparent membrane (like that of the pleura,) wholly filled with yel-

* Vide Dr. Arnott's Elements of Physics, p. 496.

low adipose matter, and united at the pleura costalis. (Pl. XI. fig. 2.) These were the only adhesions; but the pleura, over a large space, was spread with the exudation of acute pleurisy. The lung itself contained immense numbers of tubercles in both lobes, but in the superior one they had opened into vomicae: the parenchyma around them was compressed, dense, and seemingly hepatized, but on closer examination was seen to retain, in some degree, its vesicular structure. (Pl. IV. fig. 1.)

Bronchial mucous membrane violently inflamed.

Bronchial glands much tumefied.

Dr. Betton continued the examination, and found, in the centre of the right hemisphere of the brain, about an ounce and a half of clotted blood; which had doubtless resulted from the violent efforts of coughing, and was the immediate cause of death by producing apoplexy.

Remarks.—Had not the adipose cords existed in the left cavity of the chest, it is altogether probable that complete collapse of the lung would have resulted, as in the preceding case; but even under such circumstances no advantage could have accrued from it, inasmuch as the right lung was already too much disorganised to serve the purposes of respiration.

PERFORATION OF THE PLEURA.

When ulceration reaches the pleura, if the latter adheres to the pleura costalis, a barrier is formed to the extension of the abscess in that direction. But if, as sometimes happens, the adhesions are wanting, or are of delicate consistence, the ulceration makes its way through the pleura. This process is often painful; for the acrid fluids of the proximate abscesses being thrown into the sac of the pleura, and the external air at the same time admitted, sudden and violent inflammation comes on, some-

times constituting one of the most suffering episodes in this malady.

But it sometimes happens that the perforation takes place on the side of the pleura itself, owing to violent inflammation and effusion, the latter forcing its way through the thin parietes of the abscesses, and thus making its way into the bronchia. The diagnosis in these two instances may mostly be obtained as follows: if there be a sudden cessation of the sputa, with very oppressed breathing, and diffused pain over one side of the thorax, together with a want of respiratory murmur, and a dull sound on percussion, we may infer that the fluids of an abscess have found their way into the cavity of the pleura. (*Case 19.*) On the other hand, when there is a sudden, profuse, and continued expectoration of a turbid serosity, tinged with blood or mixed with albuminous flocculi, we may suspect that the pleura has emptied its contents into the bronchia; but this inundation of fluids generally proves at once fatal. (*Case 21.*)

Some authors have chosen to give to this morbid condition of the pleura, the vague and superfluous name of *pleural consumption*.*

The phenomena attendant on this complication of phthisis, are so well illustrated in the three following cases, that I shall give them in detail.

CASE XIX.

Phthisis with perforation of the pleura, effusion, &c.—R. L., a mulatto female, aged twenty-five years, was admitted into the Philadelphia Alms-house hospital, in November, 1832.

* Eberle's Pract. of Physic.

When I took charge of the wards, she informed me that her disease commenced towards the close of the year 1831, with severe pain in the left side, followed in succession by cough, haemoptysis, hectic and emaciation.

February 15th. Pain severe across the shoulders; night-sweats profuse; pulse frequent and feeble. Tongue natural. Has lately been subject to vomiting after meals, which has now subsided. Appetite unimpaired. Stethoscope detects large cavities, with gurgling, in infra-clavian and superior mammary regions of left side.

February 26th. Sudden and severe erratic pain in the epigastric and left hypochondriac regions, extending at times over the whole left side of the chest: great dyspnoea; slight diarrhoea; pulse frequent and languid.

Lingered in this suffering condition until the 6th of March, when she died suddenly.

Autopsy, assisted by Drs. Mason, M'Neil, and C. A. Porter, twenty-nine hours after death.

Body much emaciated.

Left lung adhering by a few scattered, firm, white cords; pleura costalis slightly coated with albuminous exudation. Pleura pulmonalis of a greenish colour, shrivelled, and covered with rough albuminous exudation, of a honeycomb appearance: the pleura costalis was coated with a smooth yellowish exudation: cavity of pleura contained about two quarts of turbid, sero-purulent fluid, which, on further examination, was found to have escaped from the lung through two ulcerous perforations, one at the apex, the other lower down, but also in the superior lobe: the upper opening communicated with an insulated abscess, free from fluid, but coated in patches to a depth of two lines, with a yellowish, dry, caseous matter, that peeled off in flakes. The lower perforation opened into a series of large funicular abscesses, some of the cords being still tuberculous, and all of them constituted of branches of the pulmonary artery. The lower lobe was collapsed and dense, filled with tubercles and vomicæ; in the midst of which was a mass that resembled washed fibrin, but much firmer.

Right lung free, contained many tubercles and some vomicæ.

Heart, stomach and uterus not materially altered.

Remarks.—In this instance the fluids secreted by the bronchia and abscesses were thrown into the cavity of the pleura. When the pleura has been thus perforated, from the lung, several morbid conditions—*pleuritis, effusion, exudation of lymph, and collapse of the lung*—follow each other in rapid succession. The pleuritic inflammation, as before mentioned, is excited by the fluids of the abscess; almost simultaneously effusion takes place; and in proportion to the degree of it, the lung becomes collapsed and indurated by the mechanical pressure. The exudation, the first stage of false membranes, covers the pleura; but, partaking of the inequalities of its pulmonary surface, or rather contracting with it, assumes the honey-comb appearance above described.

CASE XX.

Perforation of the pleura, with inordinate effusion, and fibro-cartilaginous adhesions.—J. J., a black female, aged twenty-eight years, came under my care in the Philadelphia Alms-house hospital, February 16th, 1833. She was seized, in December last, with pain in left hypochondrium, followed by a troublesome cough. Has had no pain since, either there or in any part of the chest. Now labours under great dyspnoea, anorexia with occasional vomiting, night-sweats, and profuse purulent expectoration. Tongue red and polished.

February 21st. Stethoscope yields no respiratory sounds in the upper half of the left lung; slight inflation of the inferior lobe. Patient keeps a sitting posture to aid respiration.

February 25th. Respiration obsolete throughout the left side, which I attribute to effused fluid, inasmuch as percussion is entirely dull over every part of it.

On the 28th of February this woman was pulseless, still sitting erect in bed, but without pain. On the following day her pulse returned, and she lingered, with extremely short and oppressed breathing, until the 11th of March.

Autopsy, assisted by Drs. Mason and Bacon, thirty hours after death. Extreme emaciation.

On opening the thorax, its *left* cavity was found to contain a gallon of offensive, turbid, sero-purulent fluid, caused by two large ulcerous openings in the pleura, which latter had the characters heretofore described. (*Case 19.*) The parenchyma of the lung had almost wholly disappeared, leaving a monstrous sac, which literally floated in the cavity of the pleura, and communicated with it in the manner just mentioned. What remained of the parenchyma was flabby and tuberculous. The pleura pulmonalis and pleura costalis, adhered in front by a dense, opaque, yellowish-white substance, of a fibro-cartilaginous texture, half an inch thick; the rudiments of its further development, were seen in numerous rounded granulations over all parts of the adjacent pleura. (Pl. XI. fig. 1.)

Right lung free, with a few unsoftened tubercles.

Heart dilated and flabby.

Other organs not examined.

Remarks.—The immense cavity which replaced the pulmonary tissue in this instance, led me to suspect the presence of gangrene; but there were none of the usual symptoms of gangrene during life, and the lung had not the fetid smell indicative of such a change. I am disposed to attribute the magnitude of the abscess, (which absolutely extended from the apex to the base of the lung,) to the supervention of pneumonic ulceration on the tubercular disease. I believe this complication to be much more common than is generally supposed; and I can recollect many cases in my former dissections, in which I think it existed, though unsuspected at the time.

It may be incidentally observed, that the heart is almost always atrophied in phthisis, and often without loss of thickness in its parieties. Enlargement of this organ is of extremely rare occurrence; I have met with it

in two instances, the one above related, and case IX: M. Louis, in one hundred and twelve dissections, noticed this phenomenon in three cases only.

CASE XXI.

Perforation of the pleura, with copious effusion: encephaloid substance.—A young man, aged twenty-three years, of short meagre person, sallow complexion, brown hair, and dissipated habits, came under my care in the month of April, 1833. He informed me that he took a violent cold about the middle of September, 1832, resulting in pleurisy, which last disease, he says, has attacked him paroxysmally ever since. I found him with the following symptoms: violent cough, aggravated by the recumbent posture, profuse expectoration of purulent matter, obvious emaciation, good appetite, and great buoyancy of spirits. Has neither pain nor dyspnoea at present, though both harass him much at times; never had hæmoptysis. The stethoscope detected large cavities in his right lung.

Under these hopeless circumstances, I applied a blister to his breast, and gave him a demulcent cough medicine. I saw him several times during the three days following my first visit, but he expired suddenly on the 16th of April.

Autopsy. Right Lung. On opening the right cavity of the thorax, it was found to contain about a quart of inodorous, sero-purulent fluid, mixed with albuminous flocculi; part of this effusion had escaped into the bronchia, through a small perforation of the posterior face of the superior lobe. The entire pleura was either adherent by false membranes, or covered with albuminous exudation: the former, at the apex of the lung, were fibro-cartilaginous, and nearly half an inch thick; the exudation was in some places of almost equal depth, assuming, over the diaphragmatic pleura, a scarlet tint, and looking, at first sight, like muscular fibre. On incising the upper lobe, it proved to be infiltrated by tuberculous matter, and contained a series of large, communicating, funicular abscesses, into one of which projected a number of small, encephaloid masses, in a state of aggregation, yellowish-white, pulpy, and being collectively about half the size of an English walnut. The inferior lobes contained disseminated tubercles.

Left lung free; slight tubercular infiltration at the apex.

Bronchial membrane acutely inflamed, and inundated with the effused fluid of the pleura.

Heart natural.

Other organs not examined.

Remarks.—In the preceding case the chronic nature of the pleuritic disease, and the appearance of the effusion render it probable that the latter had been long detained in the sac of the pleura, before it found an exit; but the proof, that the secretions forced their way from the pleura into the lung, is derived from the complete inundation of the bronchia by a fluid like that in the pleural cavity, the free communication between the two, and the sudden death of the patient.

The *encephaloid substance* met with in the above instance, has also received the name of *medullary sarcoma*, or soft *cancer of the lungs*. Its appearance is like that of the human brain, being soft, of a yellowish colour, and lobulated on the surface. Laennec has given a very accurate history of this substance, which, he says, passes, like tubercles, through three stages, until it finally becomes of the softness of paste. It constitutes the *cancerous phthisis* of Bayle; but as this is the only unequivocal instance I have met with in a great number of dissections, I cannot but infer that it is of infrequent occurrence in our climate: in fact, Bayle observed it in but three instances among 900 autopsies.*

* *Récherches, &c. t. i. p. 38.*

DISPOSITION OF THE BLOOD VESSELS.

I have already, under the head of funicular abscess, mentioned that the cords that traverse abscesses, are sometimes formed around blood vessels as stated by M. Bayle.

“ Bands of condensed pulmonary tissue, somewhat resembling the *columnæ carneæ* of the heart, charged with tuberculous matter,” says Laennec, “ often traverse the cavities. These bands are thicker at their extremities than in the middle, have by some been supposed to be blood vessels, and I believe M. Bayle himself to have shared in this mistake; for he remarks that the cavities are *often* crossed by blood vessels—a very rare circumstance in my own observations. On the contrary I have never seen a blood vessel of considerable size traversing one of these columns.”*

My dissections, on the contrary, have repeatedly detected blood vessels in these condensed bands; and in one instance the ramifications of the pulmonary artery so circumstanced, were large enough to admit a quill. Pl. IV. fig. 2. (Case 9.) Examples of this kind are, however, infrequent, and in the extensive observations of M. Louis† have been noticed but five times. It is more common to find the vessels terminate abruptly where the bands begin, forming a kind of *cul de sac*, without leaving any trace of their former existence in the bands themselves.

One of the most usual circumstances, is to find the de-

* L' Ausc. Med. t. i. p. 24.

† Récherches, p. 12.

nuded vessels passing in every direction across the cavities, their coats presenting the various grades of tuberculous disorganisation already described. The following example is a remarkable illustration of these facts.

Case XXII.

Remarkable denudation of a branch of the pulmonary artery.—A. C., a mulatto female, aged thirty-one years, was admitted to the Philadelphia Almshouse hospital, January 20th, 1833. Has had cough for a year past, and two attacks of haemoptysis previous to admission, but none since. Has night-sweats, and is subject to severe paroxysmal pain in the middle sternal region.

February 15th. Stethoscope detects cavities in the upper lobe of left lung, with distinct pectoriloquy. Percussion sonorous on same side, obviously derived from the abscess. Right side dull, but respiration pretty well preserved.

February 28th. Great dyspnœa and distress. Voice sibilant. The sudden accession of a cold north-east wind, has greatly aggravated the patient's symptoms.

March 1st. Died.

Autopsy, assisted by Drs. Mickle, Porter and Peace, thirty hours after death. Great emaciation.

Left Lung. The pleura adhered almost its whole extent; where free it contained serum. The lung itself was totally disorganised in the following manner: its inferior half was converted into dense tubercular matter in the crude state; its posterior or spinal aspect had suppurated into a large abscess, traversed longitudinally by a large blood-vessel, still pervious, though its caliber was greatly diminished. The trunk of this vessel, which I traced to the pulmonary artery, was denuded and wholly unattached for at least two inches of its course; sending off lateral branches, which, like its terminal ramifications, were abruptly lost in the surrounding tuberculous mass. The free portion of the vessel was of a bright red colour, with fragments of adhering tubercular matter. The superior portion of this lung, was a mixture of bluish gray, pulpy parenchyma in a state of incipient gangrene, with numerous small cavities, and a large pneumonic abscess at the apex. The central

portion was also gangrenous, of a mottled, dull, bluish colour. (Pl. VI.)

The *pleura* next the pericardium was about two lines thick, and of the appearance and consistence of cartilage.

Right Lung free; its middle and superior lobe tuberculous, but no cavities.

Bronchial glands tumefied.

Heart natural.

Pericardium full of serum.

Liver, stomach and *bowels* not appreciably deranged.

Uterine cavity inflamed throughout.

Remarks.—From the size of the lower abscesses, and the more chronic characters of its lesions compared with those above it, it is possible that the tuberculous disease commenced at the base of the lung.

The blood vessels thus denuded amidst tubercular disease, are mostly pervious: and I have repeatedly found them so, at the same time that they become suddenly and completely obliterated on reaching the parietes of the cavities. Thus the vessels represented on Pl. VII. were all pervious as far as they were insulated; but could not be traced into the proximate tubercular mass.

The abscess in the apex of the lung was obviously of the pneumonic kind, and the sudden aggravation of all the symptoms, on the change in the weather a short period before death, is plainly attributable to the accession of pneumonia. Such an occurrence is frequently met with, greatly abridging the duration of phthisis, yet at the same time rendering it much more painful.

CHAPTER VIII.

CASES ILLUSTRATIVE OF OTHER COMPLICATIONS OF PHthisis, WITH REMARKS.

I CAN conceive no better mode of further illustrating the protean forms of this disease, than by submitting the following series of cases, wherein I have been careful to preserve all the important facts that came to my knowledge. Every practitioner, however, has met with cases in which the symptoms were slight, and almost neglected by the patient, until within a short period of death, when his recollections of his disease had become vague and unsatisfactory: thus it has often happened, that I have obtained my facts almost independent of the patient's personal narration, and have preferred meagre truth to equivocal details. Some of these cases, again, have little other than anatomical value, but each will serve to illustrate some one of the almost interminable complications of pulmonary consumption.

Case XXIII.

Phthisis terminating in gangrene of the lungs.—J. H., aged forty-six years, with black hair and dark sallow complexion, strong frame and well developed chest, was for several years an inmate of the lunatic cells of the Almshouse hospital. His mania was of the melancholic kind. On the 4th of May, 1833, he was conveyed, in an emaciated state, to one of the medical wards; during the interval between his reception and death, which was about three

days, he made no complaint, nor was he observed to cough or expectorate.

Autopsy, assisted by Dr. C. A. Porter, twenty-four hours after death.

The *right lung* presented the anatomical anomaly of having two lobes only, both of which adhered, both before and above, by old false membranes. Between the lower lobe and the diaphragmatic pleura, was extensive exudation of coagulable lymph, marking acute pleurisy. Beneath the apex were several small cavities, and the remainder of the lung contained scattered tubercles.

The *left lung* was divided into three lobes; the superior one was completely cavernous, the space between the abscesses being infiltrated by tubercular matter. The middle lobe was also cavernous, and the surrounding parenchyma gangrenous, of a brownish black colour, intensely fetid, and strongly contrasting with the crude tubercles that were disseminated through it. Inferior lobe sound. The adhesions of the pleura were old and firm, and the sac of the pleura contained considerable serum.

Heart natural.

Liver marbled with fat.

Other organs not examined.

Remark.—In this case there was no fetor of the breath before death, which is the usual symptom of gangrene.

CASE XXIV.

Tuberculous abscess of the lung, communicating, by a fistulous canal, with an abscess on the back.—On taking professional charge of the Almshouse hospital, on the 1st of February, 1833, I observed among other patients a man by the name of John Little, an Irishman, a weaver and schoolmaster, of a robust frame, finely expanded chest, blue eyes, fair complexion, and light red hair. This man gave me the following account of himself:

He was admitted into the institution on the 27th of December, 1832, with slight cough, severe pain between the shoulders, especially on the right side, accompanied by hæmoptysis: these symptoms commenced about a month previous to admission, the pain in the onset being extremely severe. Towards the end of January,

the pain still continuing, he observed, for the first time, a swelling on the right side of his chest, between the base of the scapula and the spine, which has since continued to increase.

His symptoms now are (February 1st) occasional slight pain in the tumour, and through the upper right side of the chest, with active hectic, night-sweats, profuse purulent expectoration and occasional slight haemoptysis, loss of appetite and great debility. Tongue slightly furred. The tumour occupies nearly the whole right interscapular region; viz. it extends from the top of the chest to the inferior angle of the scapula, and from the base of the latter to the spine, which it partially crosses to the left side. The tumour thus situated is extremely elastic, evidently occupied in a considerable degree with air, and tympanitic on percussion. The stethoscope, when applied to it, yields imperfect pectoriloquy, and the same result is obtained beneath the acromial end of the clavicle of the right side.

February 1st. I had the patient carried into the clinical lecture room, where I explained his symptoms to the class, and ventured the following diagnosis:

Tuberculous abscesses in the superior lobe of the right lung, and a fistulous sinus communicating between them and the abscess on the back.

February 3d. Distinct fluctuation in the tumor, at its lower part, when the patient is in the sitting posture: the upper portion being tympanitic. Expectoration profuse; cough severe.

February 5th. Prodigious purulent expectoration: very distinct cavernous respiration on the acromial side of the right infra-clavian region.

February 8th. As before, excepting some pain in the epigastric region, of which he has suffered paroxysms throughout his indisposition. Severe hectic, and exhausting colliquative perspiration.

February 10th. Tumor has sensibly enlarged, seems disposed to point on its upper half, and is extremely sensitive to the touch. Anorexia, and occasional vomiting. Pain in the left hypochondrium. Tongue dry and furred.

February 11th. Dr. Jackson, at my request, visited the patient with me, and entirely agreed with me in the pathology of the case.

February 14th. Expectorated more than half a pint of purulent matter at one time this morning. The patient's spirits, as usual, are good.

February 20th. Pain in epigastrium and left hypochondrium much increased. Expectoration profuse. Thinks that in certain positions of his body he can feel the fluids of his abscess flow into the air-passages.

February 24th. After a violent paroxysm of cough and excessive expectoration, the tumor remains almost wholly gaseous, tight, and of course tympanitic; by pressing it I induced cough.

February 28th. Tumor half filled with air and half with fluid: when percussion is applied, the sound and sensation are the same as when we shake a vial partly filled with water.

A cold easterly wind has produced a very unfavorable effect on this man, in common with all the consumptive patients in my care.

March 1st. Tumor somewhat enlarged, and encroaching on left side. General health declining. Pl. VIII gives a faithful representation of the patient at this period, drawn by my friend Dr. S. D. M'Neil, resident physician of the Alms-house.

March 7th. Last night felt a sudden sensation as of something giving way in the upper right side of the chest, but unattended with pain: immediately thereafter profuse expectoration ensued, so that a pint spittoon was filled in a few minutes. The matter expectorated, had, and continues to have, a peculiar fetid odour, somewhat resembling assafoetida. Tumor larger than ever, and wholly gaseous. Stethoscopic signs as before.

March 12th. Expectoration still profuse, but much less offensive.

March 14th. Tumor full of fluid and tense; seems disposed to break near the centre, where it is supported by adhesive plaster.

March 16th. Dyspnœa, and a sense of weight in right infra-clavian region.

March 20th. Enormous purulent expectoration all last night, followed by aggravation of all the symptoms. Tumor entirely filled with fluid, and very sensitive.

March 23d. The apex of the tumor gave way this morning, and a pint of unmixed pus issued from it, possessing the odour of that expectorated on the 7th instant. In the afternoon the opening was

enlarged with a lancet, when another pint of pus and some air escaped from the wound. No pain. Directed a poultice to the tumor; good diet, with wine and malt liquor.

March 24th. Delirious last night; on removing the poultice this morning, about half a pint of pus and considerable gas escaped from the abscess.

March 26th. Free discharge of pus from the back. Dyspnoea and great debility came on this morning. Patient complains of coldness in the tumor to a degree that gives him a general sensation of chilliness.

March 28th. Seized suddenly last night with severe pain in the right mammary region, followed by great dyspnoea and exhaustion. No discharge from the tumor to day, and scarcely any cough or expectoration. Obviously dying. The dyspnoea and pain continued until near six o'clock in the evening, when he died, preserving to the last, a degree of consciousness and resignation, not common in persons of his sphere of life: he even granted (with some restrictions) my request to examine his body after death.

Autopsy, in the presence of Drs. S. Jackson, W. B. Simpson, H. M. Tucker, and Reeve, and Mr. (now Dr.) Arrott.—Considerable emaciation.

On laying open the abscess on the back, its parietes were found to consist of a dense, lardaceous substance, of a uniform white colour, tinged with yellow, dense but slightly elastic, and having much the appearance of the fat of pork in cold weather: this substance replaced all the original muscular structure over the abscess, towards the base of which it was more than an inch in thickness. The skin alone escaped this degeneration. At the bottom of the abscess were seen the spinous processes of four dorsal vertebræ, wholly denuded of muscular fibres, but preserving their inter-spinous ligaments; but both bones and ligaments were coated over with a firmer lardaceous matter, giving them the appearance and texture of cartilage to the depth of at least an eighth of an inch. Among the vertebræ, in the bottom of the abscess, lay a large mass of cellular membrane, of a chocolate-brown colour, but not evidently altered in texture. On removing this tissue, several fistulous orifices were seen, opening directly into the abscess, and between the vertebræ and proximate portions of the ribs: four of

these orifices were large enough to admit a bougie, which passed in each instance into a tortuous canal.

The chest was now opened.

The *right lung* was partially collapsed, its pleura firmly attached, and in every stage of inflammation, the deposit of coagulable lymph being abundant, and the adhesions almost inseparable: the cavity of the pleura was moreover filled with turbid sero-purulent fluid. The adhesions were cut through with much labour, and were found to consist of an extremely firm, whitish, fibro-cartilaginous substance, covering the posterior and superior portions of lung, and uniting it to the adjacent thoracic parietes, by a stratum more than half an inch in thickness: this cartilaginous mass embraced the ribs, occupying the intercostal spaces, and in fact formed, together with the bodies of the vertebræ, the floor of the abscess.

When the lung was removed, a single fistulous opening was seen perforating the adhesions, which opened into a canal leading towards the apex of the lung. The lung itself was now laid open by a longitudinal incision, when its apex was observed to contain an encysted abscess which looked both as to appearance and size, like a transverse section of an English walnut: the cyst was about a line in thickness, fibro-cartilaginous, smooth externally where it joined the lung, but rough and corrugated within, of a light gray colour. In the posterior wall of the abscess was an opening, leading into a canal which perforated the cartilaginous adhesions in the manner already described; this canal had a membranous lining, and would readily admit a middling sized catheter: after it perforated the cartilaginous adhesions between the first and second ribs, it branched into three or four tortuous ramifications, which terminated, as we have seen, in the bottom of the dorsal abscess, thus forming a free communication between the abscess in the lung and that on the back. At the anterior and inferior side of the former was an orifice leading to another canal, which, dipping down into the lung, terminated in the bronchia, at the root of the lung: this second canal was lined by a thin, corrugated membrane, doubtless the remains of a bronchial tube, and completed the communication between the abscesses and the trachea, thus corroborating the original diagnosis.

The whole superior lobe around the abscess was converted into dense induration, of a light gray colour, in some places presenting a slightly reticulated appearance, probably derived from obliterated air-cells: immediately below the abscess, was an irregular oblong mass of a white colour and elastic feel, crossing the lung transversely. The rest of the lobe contained disseminated tubercles, a few small vomicæ, and numerous tuberculoid granulations. The anatomical characters embraced in the above description are accurately delineated on Pl. IX.

The middle and inferior lobes of the right side were tuberculous, but without vomicæ, and capable of considerable respiratory function.

The *left lung* contained a few miliary and crude tubercles, and adhered slightly in several places, but was otherwise in good condition.

Heart natural; but the *pericardium* contained about half an ounce of serum.

Liver, spleen, and kidneys natural.

The *bladder* contained a quantity of muco-purulent matter, resembling the secretions of gonorrhœa, which flowed through the urethra upon the table.

Remarks.—I confess myself at a loss to tell which of the preceding complications was the primary affection; nor have I been able to find, in books, any analogous case. There was no assignable cause for the attack, which was sudden, and destroyed the life of the patient in a little more than four months. That the inflammation of the pleura was inordinate, is proved by the surprising thickness and strength of the false membranes; and the complete induration of the upper lobe of the affected lung, showed that it also had participated in the same inflammation. The great thickness of the cyst around the abscess would seem to indicate a chronic disease; and yet up to the time of the accession of pain, the patient had

enjoyed perfect health, and was naturally of a robust constitution.

It has occurred to me that the inflammation may have commenced in the periosteum of the upper dorsal vertebræ, and involved all the proximate parts, bone, muscle, parenchyma, &c., in the manner we have seen. But if this were the fact, why should the abscess have made its way through the lungs in place of opening directly through the back? Perhaps the aponeuroses of the back prevented such an egress; and it is moreover not improbable, that the abscess in the lungs had a prior existence to that of the vertebræ.

The *lardaceous degeneration* was the most surprising I have ever witnessed. This variety of morbid structure has been well described by M. Broussais: when incised it resembles the fat of pork; is hard, white or yellowish, of a uniform colour, and either exists in a mass, or is interposed between the laminæ of muscles. It seemingly involves almost all the tissues as in the preceding case; but the author just quoted, attributes the phenomenon, in every instance, to the influence of the cellular tissue, which, he informs us, undergoes the same transmutation. Such, however, does not appear to have been the fact in this case; for, as already mentioned, the cellular tissue of all the lardaceous parts lay in a mass in the bottom of the abscess, still firm, of a dark venous colour, and in surprising quantity. It was isolated, but not changed; while all the surrounding parts, bone (at least to a certain depth) tendon, muscular fibre, were transformed into the lardaceous substance; which, however, was nearly of a fibro-carti-

laginous consistence where it occupied the place of the two first named tissues.

CASE XXV.

Phthisis complicated with diseased liver and jaundice.—A. B., the mother of several children, aged forty years, of a very dark complexion, black hair and eyes, emaciated person, and of intemperate habits, was brought into the medical ward of the Almshouse hospital, April 29th, 1833. She was slightly delirious, had a violent cough, complained of pain in the right hypochondrium, and extreme weakness. Her stomach was very irritable, and her skin almost as yellow as saffron. It was obvious that both liver and lungs were involved in disease; but the only information I could elicit from the patient was—that she was taken ill, four months before, with pain in the side and cough, and received professional advice. Her delirium and other symptoms were past alleviation, and she died in an extremely distressed state within forty-eight hours after admission to the house.

Autopsy, assisted by Drs. C. A. Porter, Muhlenberg and Allen, fourteen hours after death. Extreme emaciation, and livid yellow colour of the whole surface of the body.

Right Lung. Old and firm adhesions at the apex: the diaphragmatic pleura, and the proximate costal pleura, (the seat of pain,) were covered with albuminous exudation. A large funicular abscess occupied the apex of the lung, beneath which the whole superior and middle lobes were occupied with tubercles and tuberculous infiltration, all of a uniform, deep, biliary-yellow colour: the colouring matter was not merely superficial, but penetrated to the centre of the tuberculous masses.

The *left lung* adhered to the apex, and in its upper lobe contained a large abscess, around which were observed precisely the same morbid appearances as on the opposite side.

Heart natural.

Liver much enlarged, indurated, and marbled throughout with adipose matter, the latter being of the same yellow tinge as the tubercles in the lungs.

Other abdominal organs nearly natural.

Remarks.—Dr. Wilson Philip supposes that one half the consumptions of Great Britain, originate in hepatic derangements;* yet he adduces but slender evidence of his opinion; nor do I hesitate to say that in this country it is by no means corroborated. It is true that I have often observed functional derangement, without being able to detect any organic lesion of the liver; but again, in a great number of cases, I have found that organ unimpaired.

In truth, every practical pathologist must have had occasion to notice, that the liver is often greatly diseased without having given any prominent character to the patient's symptoms; and again, there is often violent gastric irritation, with pain, nausea and vomiting, and other dyspeptic signs, without any evidence, from post mortem appearances, that the liver had any active part in the complication. I am satisfied that the hepatic affections are, in most instances, consecutive; for the adipose transformation (the most frequent of these affections) appears to be one of the derangements that follows, and is almost always dependent upon, tubercular disease of the lung.

It has even occurred to me, that persons who have disease of the liver are less liable than others to tubercular consumption; and that where the lungs are involved by hepatic disease, it is rather by the transmission of simple inflammatory action.

The adipose transformation of the liver is not unfrequent: in these cases the surface preserves its smoothness, but is mostly of a dull yellow colour speckled with red:

* On Acute and Chronic Diseases, p. 326.

within, it is either wholly or in part transmuted into a yellowish fatty substance, which in the early stage, is irregularly mingled with the natural colour of the liver, giving it a marbled or mottled appearance. I have chiefly noticed this change in persons of intemperate habits. M. Louis, however, found it in one-third of the phthisical subjects examined by him: from which, and from the fact of his meeting with it almost exclusively in phthisis, he considers it characteristic of this disease. The adipose liver is not observed, however, until the tubercles in the lungs have passed to the suppurative stage.

CASE XXVI.

Phthisis, with effusion in both pleuræ, and excessive tuberculous disorganisation of the liver.—R. M., a calico printer born in Ireland, aged thirty-six years, with brown hair and light complexion, was received into the clinical, from the surgical, ward of the Almshouse hospital, February 22d, 1833. He was originally admitted with a sore leg, which he has suffered much with for three years past: he has also a syphilitic bubo.

Has had cough for four months, and repeated haemoptysis; the latter has not recurred for a month past, but the catarrhal symptoms are violent, the purulent expectoration profuse, and the hectic exhausting. The stethoscope immediately detected an abscess in the left infra-clavian region, with ægophony? but so violent was the cough, and so extreme the distress of the patient, that the right side could not be examined.

February 24th. Voice sibilant. Slight cavernous respiration in right lung. Declares that he never has had pain in any part of his chest.

February 28th. Dyspnea and great restlessness. Appears to be dying.

March 2d. Rallied so much as to sit up in bed, and converse without difficulty.

March 4th. Sudden and violent accession of all the preceding symptoms. Death.

Autopsy, assisted by Drs. Mason, C. A. Porter, M'Neil and Mickle, thirty hours after death. Great emaciation.

Thorax. On opening the right side of the thorax, about two quarts of turbid serum were contained in it; the fluid had compressed the lung to one third of its natural size: the pleura was free, except a small part in front, and over the lung was rough and cellular like a honeycomb, being in some places of a greenish-yellow colour, and putrid aspect, but without fetor. The upper and middle lobes were moderately disseminated with tubercles, among which were a few small vomicæ.

The *left lung* adhered at the apex, and the pleura contained a quart of serum: within were several large communicating abscesses. All the remaining portions of the lung, were charged with tuberculous infiltration and miliary tubercles.

Bronchial glands enlarged.

Mucous membrane highly inflamed.

The *liver* was in a state of hypertrophy, and presented a vast congeries of dense, yellow, spheroidal tubercles, from the size of a cherry-stone to half an inch in diameter. They projected over the whole surface of the viscus, giving it a knobbed or noded appearance.

Spleen about five times the natural size, with a few scattered tubercles.

Kidneys natural.

The *stomach* and *intestines* presented nothing remarkable.

Although I leave the record of this case as I published it in the former edition, I do not feel entirely certain that the morbid substances observed in the liver were genuine tubercles: I thought them so at the time; but the extreme infrequency of tuberculous liver, is one of the remarkable facts in pathology. M. Lombard states, that an examination of one hundred tuberculous adult subjects afforded not a single instance of this disease in the liver; and a second table of one hundred cases among children, gives but one instance of this kind. On the other hand

in these two hundred cases there were tubercles in the spleen in thirty one cases, and more frequently in juvenile than in grown subjects.* It is proper, however, to contrast with these facts, the dissimilar results of M. Papavoine, who, on examining the bodies of fifty tuberculous children, found fourteen of them with tubercles in the liver.†

CICATRISATION OF ABSCESES.

CASE XXVII.

Excessive tubercular disease of the lungs, without the ordinary symptoms; cicatrification of a small abscess.—M. W., a thin, sallow, gray-headed man, aged sixty-two years, of intemperate habits, was admitted into the medical ward of the Almshouse hospital, April 6th, 1833. He complained of slight pain in the back, and extreme debility; he had no obvious hectic, no nocturnal perspiration, no cough, and while in the ward was not observed to expectorate. He had long been a pauper in the out-wards, but had never before, to my knowledge, been in the medical department of the institution. His constitution was worn out by spirituous potations, and he died in forty-eight hours after admission.

Autopsy, assisted by Drs. Simpson and Betton, thirty-four hours after death.—Great emaciation.

Right lung firmly adherent by old membranes; the lung itself had shrunk, drawing in the ribs so as to occasion an obvious distortion of the thorax. The superior lobe contained a number of small abscesses, and the whole remaining portion of the lung was so full of tubercles and vomicæ, as to be totally incapable of the respiratory function.

Left lung non-adherent; but so replete with tubercles that not half a cubic inch, in any place, was free from them. A few small vomicæ were interspersed among them. The anterior surface of the pleura of the inferior lobe presented a bluish-white spot, less

* ANDRAL. Anat. Path. t. i. p. 319.

† See Appendix, No. 4.

than half an inch in diameter, around which the pleura was puckered, and of a preternatural dark colour: continuous with this spot was an irregular prolongation for about an inch and a half, also immediately beneath the pleura. On cutting into the lung, these appearances were proved to result from the remains of a vomica the size of a filbert, and a fistulous canal leading from it, both of which had become filled up with a cartilaginous substance, of a granulated texture and dark green colour: in other words, here was an abscess, with its fistulous canal, both of which had become perfectly cicatrised. (Pl. XII. fig. 1.)

The *bronchial mucous membrane* was inflamed, and the *bronchial glands* much enlarged.

Heart and liver natural.

Other organs not examined.

Remarks.—Experimental physiology has proved, that a pair of healthy lungs will contain about 150 cubic inches of air; and that upwards of thirty cubic inches are changed at a single act of respiration. In the preceding case how small a degree of this vital function remained active! for probably not more than a twelfth part of the whole pulmonary apparatus was capable of respiration. A modern author has asserted that if a twentieth part of the lungs remains sound, it is sufficient for the mere continuation of life.

It has already been shown, that abscesses become encysted by depositions of lymph on their internal parietes; and it will be readily understood, that when the secretion continues and augments, the cavity may be entirely filled up. Such is the result in what is termed the cicatrisation of abscesses. The substance of these cicatrices is the same as that of the cysts, being mostly of a whitish colour and fibro-cartilaginous consistence (*Case 24*); but we occasionally see them of a granular structure as in

cases 27 and 28. If all similar appearances referred by M. Laennec to this process are really derived from it, (which seems probable) cicatrisation, at least partial, must be of very common occurrence in pulmonary abscesses: for to this source he attributes the bands of a condensed cellular substance intermixed with fibrous or fibro-cartilaginous portions, contrasting so strongly with the healthy tissue of the lungs, and so frequent in the superior lobes when these are tuberculous.¹

CASE XXVIII.

Cicatrisation of several tuberculous abscesses.—A lady, aged thirty-two years, of strong constitution and good frame, but of a nervous temperament, with dark hair and brunette complexion, had been for some time under the care of Dr. Hodge for an attack of severe nervous irritation, when, in the absence of that gentleman, I was requested to see her on the 6th of May, 1833. On my arrival I found her dying, and she survived but a few hours.

Autopsy by Dr. Hodge and myself.—There was no obvious emaciation.

The *ventricles of the brain* were nearly full of serum, but the organ itself was healthy, and no trace of tubercles was observed. The membranes, especially the *pia mater*, were highly inflamed and injected, the latter being charged with serosity, and having on its surface two or three small patches of inflammatory exudation.

The *thorax* was contracted in its antero-posterior diameter; and on removing the *pectoral muscles*, the five or six superior ribs were observed to be considerably depressed at their sternal extremities, where their cartilages joined them at a remarkable angle which protruded into the thorax. *The left lung* adhered at its apex, at which point the *pleura* was deeply contracted or puckered; within was observed a rounded white mass, about an inch in diameter, composed of adherent granules of a cartilaginous firmness; in the centre of which were two or three very small cavities, containing thickened tuberculous matter. The remainder of the lung was healthy. *The right lung*, like the left, adhered at the apex, where the *pleura*

was also deeply sunk and puckered: beneath one of these plications was the remains of an old, but very small abscess, half filled with granular matter like that in the other lung, excepting that it was of a darker colour; the remainder of the abscess was in a suppurative state, and contained yellow pus. Close by were the evidences of a second cavity, the size of a filbert, but perfectly filled and consolidated by white granular matter, precisely like that in the left lung. The remainder of the parenchyma was healthy, excepting only a small calcareous concretion towards the base of the lung.

The *liver, spleen, stomach, intestines* and other organs were examined, and appeared to be unimpaired.

Remarks.—The unexpected morbid appearances of the lungs, induced me to inquire into the previous history of the patient; when I was informed by a near relative, that in early life she habituated herself to excessive tight lacing; but that she had of latter years discontinued it, from a conviction of its injurious tendency.

It seems probable, therefore, all circumstances considered, that the lungs became tuberculous and cavernous from the irritation of mechanical pressure; but on the latter being removed, the morbid secretion ceased, and the cavities became cicatrised and obliterated in the manner just mentioned. Can there be a doubt, that if this lady had persisted in the unnatural confinement of her respiratory organs, the tuberculous disease would have extended, the abscesses enlarged, and the disease become a fatal malady? The predisposition to phthisis being slight, it was suspended by the removal of the exciting mechanical cause; showing what important results physical education may produce on the human frame.*

* “Very straight lacing and straining for a fine shape, hath made many a

When I first examined the cicatrices in the preceding autopsy, I thought the newly formed sub-cartilaginous substance was just becoming tuberculous; in other words that tubercles had formed in the cicatrix itself.* But a subsequent reference to the work of Laennec, affords a different explanation, for he gives an example† of imperfect cicatrification, occasioned by a portion of tubercular matter being embraced between the sides of an abscess during the process of union, and there retained in an isolated form, without the possibility of escape. The case I have detailed is, in this particular, precisely analogous; and I have regarded it with additional interest, on account of Laennec's remark that it is a very rare occurrence.

In the month of January, 1836, I was invited by Dr. Beattie to be present, with Dr. Nancrede, at the autopsy of a very robust woman past 50 years of age, who had died of an hepatic affection. On examining the liver, we found an abscess in it communicating with another in the right lung, through the diaphragm. On pursuing the dissection into the thorax, we were astonished to find that nearly the whole of the superior lobe of each lung was absolutely destroyed. There was no active disease, no inflammation, no tubercles: but the pulmonary structure was replaced by a knotty, cored, indurated mass, puckered in some places, reticulated in others, of a dark colour, mottled with whitish spots, and almost every where

fine girl spit blood, and ruined the lungs by preventing a full and free respiration."—REID *On Consumption*, p. 199.

* Vide First edit. of this work, page 99.

† *L'Auscult. Med. Obs. XXI.*

adherent to the pleura costalis. It was evident that both these lungs had been the seat of large irregular tuberculous abscesses, which had cicatrised and healed: at the same time, from the general consolidation of the parenchyma, it occurred to me that a vast congeries of tubercles had been removed by absorption. The friends of the deceased had no recollection of her ever having had consumption, or any severe pulmonary affection, although she was for many years subject to hoarseness. It is probable that the disease occurred in very early life; and it affords an instance of spontaneous cure by cicatrisation under circumstances which, in their full activity, must have been hopeless indeed.

Laennec seemed disposed to anticipate the complete cicatrisation of abscesses in a much larger proportion of cases than experience is likely to realise. Besides, as in *Case 27*, one abscess with its fistulous canal may undergo this process, at the same time that innumerable tubercles, and numbers of abscesses, remain in a state of active irritation: under which circumstances the cicatrisation removes but a thousandth part of the disease, and affords no sensible relief to the patient.

“ It may in general terms be assumed,” says M. Laennec, “ that when the sputa are yellow and opaque, the emaciation considerable, the hectic intense, these symptoms are less unfavourable when conjoined with manifest pectoriloquy, than when they exist without the latter phenomenon; because, in the first instance, the symptoms may be attributed to the efforts of nature in softening and removing the tuberculous mass, and we may indulge

the hope that they will cease when this process is completed, provided the remaining portions of the lung be in a healthy state. Whereas, in the second case, we may suppose the existence of a great number of tubercles, which will exhaust the patient before they can become softened and form ulcerated cavities.”*

But the complete uncertainty of an accurate diagnosis in such cases, must be obvious to every one; and although I have been able to record several examples of almost perfect cicatrisation, and consequent spontaneous cure of phthisis, the instances are so rare that they are perhaps to be regarded as extraordinary exceptions to a general law of nature.†

CASE XXIX.

Phthisis of one lung, complicated with acute and chronic peritonitis.—P. M., a French cartman, aged thirty-two years, sharp features, emaciated person, black hair and sallow complexion, was admitted into the Almshouse hospital on the 6th of April, 1833.

Complains of great pain and soreness over the whole abdomen, which he says first attacked him, together with active fever, thirteen days since. His abdomen is now tense, extremely sensitive to the touch, and full of fluid, which last he declares did not appear until the past week; and that previous to the present attack he was, so far as he knew, in good health, being able to pursue his avocation without intermission, having never been troubled with cough, pain in the chest, short breath, or any other indication of diseased lungs. I was induced to inquire particularly on these points, because his aspect was that of a man whose lungs were

* L'Ausc. Med. t. i. p. 128.

† The cicatrisation of pulmonary abscesses, was not unknown to the pathologists of the early part of the last century.

“ Prostant tamen exempla phthisicos incipientis curatae, in quibus vestigia autocratica restitutionis et cicatricularum detecta sunt.” Stahlii Op. Med. Tab. XXXIV.

affected. His extremely exhausted state induced me to forego the application of the stethoscope, and he lived but forty-eight hours after admission.

Autopsy, assisted by Dr. Simpson, twenty-four hours after death. Emaciation extreme: skin of a yellowish, sallow hue: abdomen tumefied, but no œdema of the extremities.

Right lung sound in its parenchyma, not having a solitary tubercle in any part: its pleura, however, adhered firmly in several places: and where free, was studded with diaphanous miliary granulations, which, on the diaphragmatic pleura, were of a yellowish colour, and looked like tubercles.

Left Lung. Apex free, and superior lobe sound almost throughout; but at its lower margin the tubercular degeneration commenced, the parenchyma being literally solid with large tubercles, aggregated, and in every stage of development. Around the tubercles the lung was of a dark red colour, and dense, like hepatisation, excepting that it wanted the distinct granular structure. The base of the lung was attached to the diaphragmatic pleura, by dense fibro-cartilaginous adhesions, not less, in some places, than three-fourths of an inch in thickness. The diaphragm itself, though retaining its muscular fibre, was completely covered, on both its surfaces, by layers of the same dense substance, as was obvious on opening the

Abdomen. The entire surface of peritoneum, both its abdominal and visceral surfaces, was thickly studded with diaphanous, gray, miliary granulations, mostly the size of a millet-seed: the liver, spleen, stomach, &c., were all covered in the same manner, but none of these organs were tuberculous within, or enlarged, or sensibly disorganised: over all the granulations on the umbilical and anterior hypogastric portions of peritoneum, there was a free exudation of lymph, marking an extensive acute inflammation. The abdominal cavity contained two quarts of turbid serum.

Remarks.—This patient was obviously carried off by the supervention of acute or chronic peritonitis. A tuberculous state of the peritoneum is not a frequent occurrence: Laennec and Louis have seldom met with it; but I

observe that M. Papavoine found it in nine of fifty children who died of phthisis.*

CASE XXX.

Tubercular disease of nearly all the viscera: gangrene of the lung.—B. B., a black labourer, aged fifty years, of an athletic frame, was admitted to the Almshouse hospital, August 26th, 1833. Says he was attacked four months ago with violent pain in the chest, aggravated by a constant cough, followed soon after by spitting of blood. Had the cholera a year ago, and has never been quite well since.

Has now active hectic, colliquative perspiration, and pains in the limbs, but none in the chest.

The stethoscope indicates a collection of fluid in the left pleura, which seems to communicate with a cavity in the lungs: vesicular respiration obsolete throughout.

Right lung tuberculous.

August 28th. Pulse weak and tremulous; but no pain, or even distress in any part of the body.

September 1st. Extreme exhaustion and rapid emaciation.

September 4th. So weak as to be unable to change his position, yet has no dyspnœa, pain, or even restlessness. Complains of debility only. Breath extremely fetid. No diarrhoea.

September 5th. Died.

Autopsy, assisted by Drs. C. A. Porter, Paul and Thornton, eighteen hours after death. Extreme emaciation.

Thorax. Right lung free, but the pleura was thickened, and spotted over almost its whole surface with melanotic matter, which seemed, however, to be rather in the subjacent cellular tissue: the lung itself contained disseminated spots of the same substance, and great numbers of small, tuberculoid granulations, which in one place had coalesced and partially softened,

Left Lung. The pleura adhered throughout, and formed the exterior parietes of an immense abscess, which, having almost destroyed the lung, extended its ravages between the lung and its pleura, separating the two almost to the base of the lung; in this manner a cavity was formed capable of holding a quart, and partially

* *Journal des Progrès, Tome 2, 1830.*

filled with a dark-coloured, fetid pus. What remained of the parenchyma was filled with tubercles, and gangrenous in its upper half.

Bronchial glands enlarged and tuberculous.

Bronchial mucous membrane inflamed.

Heart natural.

Liver fatty, with many small tubercles.

Spleen enlarged, firmer than natural, and full of tubercles.

Kidneys enlarged; structure distinct and pale, with a few tubercles.

Stomach inflamed, and its cellular coat so emphysematous as to resemble, at first sight, an extensive white tumor, projecting internally.

Mesenteric glands enlarged and tuberculous.

Brain healthy.

Remarks.—The preceding case presents a remarkably tuberculous diathesis. It was the first instance in which I detected tubercles in the kidney—an unusual occurrence, for Louis found them in but a fortieth part of his dissections of tuberculous subjects. I have often noticed a preternatural redness of these organs, connected with an obvious hypertrophy, and a very distinct arrangement of the cones constituting their medullary portion. Patients occasionally complain of excruciating pain in the lumbar region, (*Case 17;*) which may be owing to chronic inflammation of the kidneys, ending in the enlargement above mentioned.

CHAPTER IX.

OBSERVATIONS ON THOSE DISEASES WHICH SYSTEMATIC WRITERS HAVE REGARDED AS SPECIES AND VARIETIES OF PHTHISIS.

SECTION I.

NOTHING is more unsettled than medical nomenclature; nor shall I attempt to reconcile its discrepancies: but one thing is certain, that if they ever should be reconciled, pathology alone must effect it.

Modern pathologists have very generally restricted the term *phthisis pulmonalis* to tubercular disease of the lungs, or, in the words of Laennec, “tubercles in the lungs are the cause, and constitute the essential character of phthisis.” In fact, in nearly all those who die of consumptive symptoms, the lungs present, as a principal lesion, a greater or less number of tubercles and tubercular abscesses. I think M. Louis states that he never met with an exception: and but three examples have fallen under my own notice.

Most practitioners, however, use the word phthisis in a generic sense,* for although so large a proportion of

* The ancients used *tabes* in this sense, and made three species which they termed *Ατροφίαν*, (atrophy,) *καχεξίαν*, (cachexy,) and *φθισίν*, (phthisis.) The distinction, however, which they supposed to exist between these diseases, was

consumptions are strictly of the tuberculous kind, there are others in which tubercles have no part. Yet the distinctions have been extended by some authors with a perplexing refinement, often involving repetitions, and little calculated for practical utility. Thus Dr. Richard Morton enumerates about twenty species; Portal fourteen, Demelet twenty-four,* and Bayle, as we have just seen, six. I think it unnecessary to give even the names of these supposed species of phthisis, excepting in the case of M. Bayle, whose views must ever command our respect, because they were based on the assiduous cultivation of pathological anatomy. M. Bayle's division embraces the following varieties of phthisis: 1, tuberculous; 2, granular; 3, melanotic; 4, calculous; 5, cancerous; 6, ulcerous.† Respecting these Dr. Horner observes, on analysing Bayle's table of nine hundred cases, that the first three varieties "constitute ninety-eight and a half per centum of the whole."

Every one is familiar with the four specific appellations of consumption in common use; viz. the tubercular, laryngeal, catarrhal, and apostematous. However inconsistent the last three names may be with strict pathology, they will probably long hold their place as matters of convenience, and claim a brief exposition in this place.

of course hypothetical, owing to their defective pathology. Vide CELSUS, De Med. Lib. III. Cap. XXII.

I may here add, that I never could discover any real difference between the *phthisis* and *phthoë* of the ancient authors. It is certain that these names were sometimes used synonymously: "phthisis, sive ut plerique appellant, phthoë," etc. C. AUREL, Lib. II. Cap. XIV.

* This author even proposes three *genera* of phthisis!

† Sur la Phthisie, p. 21.

SECTION II.

CHRONIC LARYNGITIS.

Laryngeal Phthisis.—This disease is a chronic inflammation of the mucous membrane of the larynx. It is often protracted for many years, involving extensive ulceration and in some instances gangrene.

That both laryngeal and tracheal ulceration are commonly consequent to a tuberculous condition of the lungs, there can be no question: but it is equally certain that both tracheal and laryngeal ulceration may occur as independent diseases, and cause death without involving the lungs, of which striking examples are contained in the works of Dr. Badham* and others. In one hundred and two examinations of persons dead of phthisis, Louis found the larynx ulcerated in twenty-three cases.

This morbid condition is well illustrated in the following example.

CASE XXXI.

Phthisis, with extensive ulceration of the mucous membrane of the bronchia, trachea, and larynx.—Owen Twin, an Irish labourer, aged twenty-four years, with reddish-brown hair, florid complexion, blue eyes, and a well-formed chest, was admitted into the Almshouse hospital, August 24th, 1833.

Says he was perfectly well, and had always enjoyed good health until the 9th of the present month, when he was taken with a violent cold, accompanied with a bad cough, and general debility, all which have increased daily ever since.

Has now a constant cough, some hoarseness, fever, colliquative

* On Bronchitis, p. 63.—Andral, on the contrary, states that the larynx is rarely if ever found in a state of ulceration, unless there are tubercles in the lungs.

perspiration, sick stomach, and slight diarrhoea. Has never had haemoptysis. The stethoscope detects a large cavity in the apex of the left lung.

August 26th. Considerable dyspnœa, which was relieved by free cupping. No pain.

August 29th. Hectic severe: but the diarrhoea has not returned.

September 5th. Dyspnœa and severe cough, which were relieved by cupping. Expectoration profuse and purulent; tongue dry, with a slight brown fur.

September 8th. Delirium last night. Return of dyspnœa, and complains of extreme oppression at the chest.

September 11th. Died.

Autopsy, assisted by Drs. C. A. Porter, Paul, Bacon, Peace and Thornton.—Emaciation moderate.

Right lung free, but contained a great number of yellow, opaque, irregular tubercles, but no abscesses, excepting two or three about the size of a filbert in the superior lobe.

Left lung slightly adherent, completely tuberculous, with a large, delicately encysted abscess in the apex, communicating with several others beneath.

Bronchial glands enlarged, yellow, and of a caseous consistency.

Bronchial membrane excessively inflamed and deeply ulcerated near the bifurcation. Membrane of the *trachea* and *larynx* also violently inflamed, and covered with numerous large, deep ulcers, which on the anterior portion of the trachea had destroyed the cartilages for an inch in length. In the larynx the mucous membrane was almost destroyed, being reduced to a thin, soft consistency, of a pale yellow colour. (Pl. X.)

Heart natural.

Stomach, mucous coat softened, and an ulcer the size of a fingernail near the pylorus.

Intestines. *Mucous membrane* softened, but not ulcerated.

Mesenteric glands greatly enlarged and caseous.

Liver almost wholly transformed into a fatty substance of a yellowish colour.

Spleen tuberculous.

Kidneys sound.

Remarks.—When this man first came under my notice, I thought his case might be one of acute phthisis, although I could scarcely believe in the formation of a tuberculous abscess in the short period of fifteen days: the autopsy, however, explained all; for it is certain that the encysted abscess had existed in his lung long before it gave him any uneasiness; and what he supposed to be the onset of disease on the 9th of August, was in fact the supervention of inflammation in the mucous membranes of the air-passages, from the irritation of such a vast congeries of tubercles. This inflammation had passed rapidly to ulceration, in some places destroying even the tracheal cartilages; and yet it is surprising that the patient never once complained of any pain or uneasiness, that could have led to a suspicion of such a complication !

This case combines both the tracheal* and laryngeal phthisis of the nosologists, the ulceration of the trachea, however, greatly predominating. Authors tell us how to distinguish these two affections from each other; they say that the pain of tracheal phthisis is lower down than when the larynx is affected, and that in the former disease the voice is not altered. In the example before us the patient never complained of pain in the air-passages, and although the larynx was manifestly involved to a considerable degree in the ulceration, the voice was not more affected by hoarseness than is common in ordinary catarrh: yet it is to be observed that the ulceration did not affect the vocal ligaments.

* Louis, in 102 cases of Phthisis, observed the Trachea ulcerated in 31, the epiglottis in 18 cases.

It may be here added, that the *pharynx* becomes ulcerated in a great proportion of consumptive cases. The ulceration does not usually cause much destruction of parts, but appears rather as a superficial abrasion of the skin, somewhat florid, granulated and irritable, but more frequently, perhaps, of a yellowish white colour, shining and almost insensible. Patients often have this condition of the throat without being sensible of it; and the first circumstance which calls attention to the fact, is not pain but *dryness* of the fauces. It often involves the pharynx as far as the eye can reach both up and down, but is chiefly observed on that portion which covers the spine. Occasionally, but more rarely, deep, intractable ulcers appear on the velum palati; and sometimes the ulceration advances even into the mouth, rendering both mastication and deglutition extremely difficult and painful. These symptoms have given rise to some of the most distressing cases of phthisis that I have ever witnessed.

SECTION III.

ULCEROUS PNEUMONIA.

Apostematous, or Pneumonic Phthisis. Ulcerous Phthisis of Bayle.—When pneumonia ends in abscess of the lung, a morbid condition results which can seldom be distinguished from tubercular disease, unless the previous symptoms are carefully appealed to. The well known preference of pneumonia to attack the inferior portions of the lung will occasionally assist in the diagnosis, but the general symptoms consist in hæmoptysis, purulent expectoration,

pain in and near the affected part, hectic fever and emaciation, while the stethoscope detects cavernous respiration, as in tubercular abscess.

It was until within a few years a common opinion, that pneumonia often terminates in abscess; but it is now, by almost universal consent, admitted to be a comparatively rare occurrence. "During the three years" says Broussais, "that I have been engaged in this vast theatre (the army hospitals,) I have examined the bodies of all those who died of phthisis in my charge; of these but one had ulcerated lungs without tubercles; and this was caused by the presence of a foreign body."

I confess myself surprised at the very opposite conclusions drawn by Sir Alexander Crichton from an extensive experience in pneumonia; for he asserts that in *every case* where he inspected the lungs of persons who had died in the purulent stage of pneumonia, he found an ulcerated cavity containing pus. Whether this discrepancy is owing to variations of the disease dependent on climate, I will not attempt to decide; but I am confident that the experience of Laennec, Broussais, and many others, is applicable to the pneumonia of this country.

Case XXXII.

Chronic pleuro-pneumonia, terminating in abscess of the lung and gangrene, without tubercles.—W. B., a black boy, aged fourteen years, of an emaciated person, long thin visage, chest flattened above, narrow and projecting at the scrobieulus cordis, eyes prominent, sclerotica yellow, was admitted into the Alms-house hospital, on the 3d of July, 1833. Not being in attendance on the institution, I did not see him until the 6th.

He informed me that he was for several hours exposed to wet

and cold about five months ago, in the depth of winter: was soon afterwards seized with violent pain in the right side, constant cough and fever. Under these circumstances he received very little attention. Has long laboured under hectic fever, profuse night-sweats, burning dryness of hands and feet, and some pain in both mammary regions; cough constant, and expectoration considerable; but has never spit blood.

He has all these symptoms at present, together with great restlessness, dyspnœa, and slight diarrhœa. I attempted to apply the stethoscope, but his constant jactitation precluded its use. He died the same evening.

Autopsy, assisted by Drs. Bacon, Postell, Allen, Peace and Thornton, seventeen hours after death.—Considerable emaciation.

Right Lung. Very firm, and general adhesions between the pleuræ, especially around the middle lobe, where was a large circumscribed cavity, formed between the lung and pleura costalis, and partly filled with frothy, muco-purulent fluid. On removing the lung (which was effected with difficulty on account of the extreme firmness of the adhesions,) it was found to contain, in its middle lobe, numerous small abscesses the size of a filbert, partially divided by septa composed of blood-vessels and condensed pulmonary substance, and communicating freely with the abscess of the pleura, and with the bronchia. The blood-vessels were about the size of a crow's quill, and completely denuded; in fact, the cavity had all the characters of funicular tuberculous abscess; but not a trace of tubercular matter, not even a miliary granule, was any where to be found: the lung was hepatised and flabby, except at the apex, which presented considerable sound respiratory structure. Gangrene had commenced in the parts adjacent to the abscess, giving them a greenish-brown colour, and exhaling an intensely fetid odour.

Left lung slightly adherent; pulmonary tissue unimpaired.

Bronchial membrane highly inflamed; and bronchial tubes filled with muco-purulent fluid.

Heart dilated, flabby, with a small spot of organised false membrane on its body.

Liver natural.

I wished much to have examined the lymphatic system, but was prevented by the intolerable fetor and extreme heat of the weather.

Remarks.—Here were all the characteristic symptoms of phthisis pulmonalis; here was abscess and denudation of vessels, without a trace of tuberculous disease, although the pneumonic irritation had lasted five months, and this, too, in a negro. Must we not attribute this fact to the total absence of the tuberculous diathesis? The presence of gangrene was perfectly well marked; and some pathologists may attribute the cavities in the lung to the separation of eschars; but as the sphacelus occurred in the centre of a chronic pneumonia, it is but reasonable to regard it as one of the terminations of the latter.

When gangrene commences in the lung, it may usually be detected during life by the insupportably fetid breath of the patient: in the present instance this pathognomonic sign was absent, nor was there any reason to suspect the gangrenous change.

CASE XXXIII.

Pneumonic abscess in the lung, communicating with an abscess of the liver, without tubercles.—J. Wheeler, a negro, aged thirty years, with a deep but narrow chest, was admitted into the Almshouse hospital in May, 1833; but not being in attendance on the institution at that time, I did not see him until the 1st of June, when he gave the following account of himself: that during a voyage in an open boat down the Magdalena river in South America, in the month of August, 1832, and while the boat was going with great velocity, his right breast came in contact with the projecting branch of a tree, by which he was knocked down, and stunned by the blow: on reviving, he suffered extreme pain beneath the injured part, extending from the right hypochondrium to the top of the shoulder; which pain has continued with little intermission ever since.

He has now severe pain, increased by a full breath, purulent

expectoration, but no night-perspiration or haemoptysis. Pulse slightly accelerated; tongue a little furred. Complains of debility.

June 15th. The stethoscope shows that there is scarcely any respiration in the anterior and lateral portions of the mammary and infra-mammary regions of the right side. Left lung not obviously impaired.

July 1st. Increased debility and purulent expectoration: the cough, however, is not distressing, and the pain is diminished.

July 15th. Copious purulent expectoration, streaked with blood.

July 20th. The sputa are now constantly mixed with blood, and the cough is aggravated.

August 1st. Purulent expectoration, and haemoptysis profuse. Hectic active.

August 15th. No other change than increased debility. Stethoscope again used, but detects no lesion except at the spot noticed June 15th.

August 26th. Diarrhoea came on two days since, attended with constant pain in the epigastrium. Haemoptysis, &c, as before.

August 28th. No pain whatever to-day: great debility.

September 9th. Severe headache since the 5th, which neither cups nor blisters have in any degree mitigated.

September 14th. Headache continues, with great exhaustion, fetid breath, slight return of diarrhoea, and some delirium.

The patient continued to decline until the 29th of September, when he died without pain or distress.

Autopsy, assisted by Drs. C. A. Porter, J. W. Paul, Allen, Bacon and Thornton.—Great emaciation.

The *right lung* contained a large abscess, occupying a considerable portion of the middle and lower lobes; its sides were fibro-cartilaginous, rugose within, and covered with a layer of coagulable lymph. The external wall of the cavity was formed by the ribs and intercostal muscles, to which the lung had so firmly adhered as to be separable only by tearing it. From the pulmonary abscess a short fistulous canal, about an inch in diameter, passed downwards, perforated the diaphragm, and opened into an abscess in the liver: this second abscess was about the size of a duck's egg, with very dense, diaphanous parietes, of a

fibro-cartilaginous texture, and in some places a fourth of an inch thick: but the external side of the cavity was bounded by the proximate part of the abdomen, to which the liver firmly adhered, so as completely to circumscribe the abscess: the latter was half full of thick pus and blood, mingled with some remains of cellular tissue.—The parts of the lung surrounding the abscesses were much condensed, almost entirely deficient in respiratory structure, and of a dark red or livid colour. The liver proximate to the hepatic abscess was also condensed, hard, and of a very dark colour. The superior lobe of the right lung was perfectly sound.

The *left lung* was œdematos, but in other respects healthy.

The *spleen* presented an unusually pale colour.

The *bronchial mucous membrane* was slightly inflamed.

The other organs were not examined.

Remarks.—The preceding case is susceptible of a very simple explanation: the blow on the chest was succeeded by inflammation of the proximate organs within—the lung, diaphragm, liver, and their tunics: suppuration and abscess followed, with the train of symptoms already enumerated. Judging from the quantity of blood found in the hepatic abscess, I attribute the principal hemorrhage to that source.

It is remarkable that the stethoscope did not detect cavernous respiration, although it showed precisely the seat of disease in the lung: but I explain the former circumstance by supposing that the lung was so condensed around the abscess, as not to expand sufficiently to admit a free access of air. The liver was suspected from the beginning, and mercurials were administered accordingly; but the complication was of a nature to be little benefitted by them. It is perhaps superfluous to add, that all the usual topical applications

were tried in this case; but inhalation, the only plan of treatment which promised much advantage, was precluded by the difficulty of providing the patient with a separate apartment.

The above case forms an exception to the characters of pneumonic abscesses, as given by Bayle; for he says that they are never lined by a distinct membrane, or even by a layer of albuminous matter of a membranous form.* Yet in the present instance both these appearances were strikingly obvious, although there was no trace of tubercular disease.

The quantity of blood contained in these abscesses together with the soundness of the lung elsewhere, leaves no doubt that the hemorrhage was from the cavities themselves; affording an additional illustration of hæmoptysis from the parietes of abscesses:† an occurrence not unfrequent in purely pneumonic cavities, as we have already seen.‡

* *Récherches, Sur la Phthisie Pulmonaire*, t. i. p. 30.

† *Vide Hæmoptysis*, p. 60.

‡ I have received from Drs. John A. Elkinton and William Ashmead the following highly interesting case in further illustration of this subject. The pathological importance of these details induces me to insert them entire in the words of the gentlemen who furnished them.

“ Joseph Harmer, aged twenty-four years, of temperate habits, middle stature, thorax prominent and quite capacious, has been subject to attacks of hæmoptysis and asthma for the last four or five years. About sun-rise on the morning of the 23d of August, 1833, he was seized with profuse hæmoptysis while walking in the street. There was great lividity of countenance, anxiety and oppression at the breast, the patient throwing up copiously florid blood, which threatened suffocation. By appropriate remedies these symptoms were arrested, and he was carried home much debilitated. A proper auscultation of the chest was prevented in consequence of the fatigue which it occasioned. Breathing continued laborious, with asthmatic symptoms, until the 27th, four days after the hemorrhage, when he suddenly expired.

Simple pneumonic abscess is often radically cured. The most interesting case of this kind in my practice occurred in the spring of the present year, and was attended by Dr. J. R. Barton, in consultation. Mrs. M., a middle aged woman, of robust constitution, was attacked almost simultaneously with erysipelas, apoplexy and pneumonia. The first two maladies were soon conquered, but under circumstances as seemingly hopeless as can well be imagined. The symptoms of pneumonia were then rapidly developed with unusual intensity, terminating in an abscess of the right lung, a little behind and above the mammary gland. There was considerable tumefaction at this part, so much so that I was apprehensive the abscess would point externally. Suddenly, however, purulent expectoration came on to an inordinate extent, so that it was not uncommon for the patient to expectorate a pint of pus in a few minutes, accompa-

Autopsy. Lungs almost universally adhering to the pleura costalis by old, elongated, pleuritic adhesions. They did not collapse on opening the chest, were unusually large and weighty, and several small apoplectic spots were found in both lungs, but no tubercles in either. In the inferior lobe of the right lung, there was a large irregular cavity; sufficient to hold half a gill of fluid, with firm unyielding parietes, covered with a thin layer of adherent puruloid secretion. It contained only a little mucus. Its lining membrane was covered apparently with engorged varicose vessels, giving somewhat the appearance of the transudation and staining of the coats of the stomach from engorged veins. The surrounding structure of the lungs was in a state of splenification. Left lung contained a cavity similar to the right, but more regular, with a small quantity of slightly bloody mucus. The contents of this cavity, (originally the source of the hemorrhage,) were prevented from communicating with the cavity of the pleura by a cartilaginous wall, lining its parietes, which appeared to be adventitious structure thrown out in an effort of nature to defend herself against further lesions. Large bronchial tubes communicated with the cavities. Both lungs were enormously enlarged, amounting to hypertrophy, but there was no apparent source of hemorrhage except in the abscess. The heart was rather large."

nied by violent cough, hectic fever, and excessive prostration, night sweats, &c. Yet by a persistent use of blisters, tonics, the ordinary expectorants and a light nutritious diet, the patient ceased to have any remains of her pulmonary affection in less than two months from the primary attack.

M. Broussais has applied the term *Pneumonic phthisis*, to that form of tubercular disease which most resembles simple inflammation of the pulmonary tissue. Such cases, he observes, are preceded by long-continued irritation of the lungs analogous to ordinary catarrh, which suddenly assumes the character of pneumonia. But Broussais takes the position that the inflammatory action induces the tubercular disease; yet it seems probable, even in the cases cited by him, that the tubercular matter may have existed in the lungs prior to the accession of either the catarrh or acute inflammation. That the reverse may take place in those predisposed to phthisis I have already shown; but there is much difficulty in identifying the cases.

One of my patients, an athletic man aged twenty-five years, had been for a considerable time subject to dyspnoea and cough: suddenly pneumonia came on and terminated his life in ten days. The affected lung was almost equally hepatised throughout, and at the same time pervaded by miliary tubercles: of the latter not more than half a dozen had become softened. (Pl. I. fig. 2.) M. Broussais would attribute the tubercles in this case to pneumonic inflammation: but might it not be inferred with equal probability, that the catarrh was a mere con-

sequence of tubercles, and that these, owing to their great number, eventually induced pneumonia?

SECTION IV.

CHRONIC, OR PURULENT BRONCHITIS.

Catarrhal Phthisis.—The catarrhal phthisis of the nosologists is a *chronic* or *purulent bronchitis*: when catarrh is accompanied by a secretion of pus, (of which we have seen the diseased mucous membrane is susceptible) the symptoms so resemble those of tubercular phthisis, that a positive diagnosis can seldom be attained except by the stethoscope. In truth, nothing can be more fallacious than the distinctions which have been founded on the mere cough, expectoration and pain. Let us take, for example, the definition given by a late distinguished systematic writer. “The cough is frequent and violent, with a copious excretion of a thin, offensive purulent mucous, rarely mixed with blood; generally soreness in the chest, and transitory pains shifting from side to side.”*

Now every practitioner knows that all these symptoms are as common to tubercular as to catarrhal disease, and that the former (in its second stage) is seldom or never free from the latter.

Catarrhal phthisis, however, is of frequent occurrence as an idiopathic disease, often fixing itself in youth and continuing as an habitual infirmity through a protracted life.

* Good. *Study of Med.* vol. ii. p. 743.

When bronchitis has thus become chronic, its more striking symptoms are as follow:

The cough is extremely harassing, and is followed by profuse expectoration of a glutinous mucus, of a gray or greenish hue, and sometimes streaked with blood. In other instances it is yellow and opaque, resembling pus;* and again is composed of real pus. A fetid odour not unfrequently attends the expectoration, but is mostly of transient duration. Great efforts are often requisite to dislodge the mucus, and the paroxysms of cough may be thus protracted for a length of time before relief is obtained. Emaciation and febricula are always present in a degree, and that debility of the organs in general which is common to all chronic affections of the lungs.

It will at once be asked, in what do these symptoms differ from those of true phthisis? In nothing whatever. Nor, until the discovery of the stethoscope, was there any certain means of distinguishing a purulent bronchitis from tuberculous consumption.

An examination with the stethoscope, however, is in most cases perfectly unequivocal, and will present the following result: "If, after having observed the patient many times at different periods of the day," says Laennec, "we can detect neither the gurgling, pectoriloquy,

* LAENNEC has given the name of *pituitous catarrh* to that variety in which the "expectoration is colourless, transparent, ropy, frothy on the surface and underneath like the white of an egg diluted with water." I have great satisfaction in referring the reader, for further information on the different forms of catarrh to the admirable work of Dr. Charles Badham, entitled "*An Essay on Bronchitis.*" London, 1814. The history and treatment of chronic coughs, constituting the 8th chapter of that work, should be read by every physician.

or cavernous respiration, nor the constant absence of respiration in any one place, while at the same time the respiratory sounds are heard throughout the lungs, we may confidently infer that the disease is a chronic catarrh."*

Percussion applied to any part of the chest, will convey a nearly equal resonance; and, in fact, in chronic bronchitis the pleximeter affords little or no aid.

Purulent bronchitis is produced by many of the same causes that excite tubercular disease; but more especially by sudden transitions of temperature, the inhalation of irritating particles, excessive vociferation, or the development of morbid substances in the lungs, of which last I shall proceed to give a remarkable example.

Case XXXIV.

Phthisis simulated by chronic catarrh from osseous concretions in the lungs.—A lady, aged twenty-seven years, with fair though colourless complexion, very light hair, delicate person, and spine excessively deformed since her seventeenth year, consulted me for a habitual catarrh, which occurred in frequent paroxysms, attended with hectic fever, flushed cheek, erratic pains in the chest and shoulders, dyspnœa, languor, and profuse purulent expectoration, but no hæmoptysis. I repeatedly attended her during several successive years, and had little doubt of her lungs being tuberculous; but the stethoscope, the sole means of certain diagnosis, was never applied.

On the 13th of May, 1830, she experienced a severe attack of catarrh, was freely bled, had a hot saline pediluvium, and an opiate cough mixture. The following day she was much better, sat up all the afternoon, and retired to bed early in the evening, seemingly convalescent. At five o'clock the next morning she was observed to breathe and groan very heavily, and to be entirely un-

* L'Ausc. Med. t. ii. p. 77.

conscious. I hastened to see her, but found her cold, pulseless and dying, and she expired at eight o'clock.

Autopsy, assisted by Dr. Togno, twenty-eight hours after death. Emaciation not remarkable.

On opening the thorax, both pleuræ were found entirely healthy, there being no adhesions, exudation or effusion, or any signs of their ever having existed.

The lungs were compressed into unequal chambers at the upper and posterior part of the chest, the latter being so excessively deformed that it was difficult to conceive how respiration could be effected.

Right lung perfectly sound in its parenchyma, but its bronchial mucous membrane was inflamed in the highest degree, and the bronchia contained a thick, yellow, inodorous pus, which was particularly obvious on cutting across the membranous tubes: the larger ones were completely filled with thin sero-mucous secretion.

Left lung also healthy in its parenchyma, excepting that it contained, in the centre of its inferior lobe, an osseous concretion the size and appearance of two peas united side to side, slightly rough on the surface, and firmly attached to the surrounding lung; but there was no cavity, no suppuration, no inflammation immediately connected with it. Not far from it was found a much smaller spheroidal concretion, of precisely similar character.

The *bronchial mucous membrane* was circumstanced precisely as on the opposite side, and the bronchial tubes were filled with pus.

Bronchial glands enlarged, but not tuberculous.

Heart, liver and peritoneum perfectly healthy.

Remarks.—Here were all the external signs of the scrofulous diathesis, curved spine, hectic, constant and often violent cough, and purulent expectoration, but not a solitary tubercle in any of the organs examined. It is obvious that all the symptoms arose primarily from the irritation of the two small osseous concretions, and that the immediate cause of death was effusion into the bronchia.

The copious secretion of pus forms an interesting feature of this case, and shows us how completely a practi-

tioner may be deceived, who thinks this appearance conclusive of the existence of an abscess. Even Dr. Cullen was misled by it; for he says without reservation, "In every instance of an expectoration of pus, I presume there is ulceration of the lungs."

The preceding case is an example of the *calculous phthisis* of Bayle,* who includes in this designation all concretions met with in the lungs, whether of an earthy or of a bony texture. These bodies generally occur in complication with other pulmonary diseases, and can scarcely be supposed to constitute a specific form of consumption.

These concretions are sometimes coughed up, affording temporary relief to the patient.† Such, I am informed, was the case with the late Dr. Godman of this city, who, however, derived but little respite from the confirmed consumption that prematurely ended his useful life.

I might here enter into an examination of various other forms of disease which have been considered by authors as *species* of consumption. In this indiscriminate manner, every malady attended by emaciation and hectic, with or without cough, has been called a *phthisis*, with a specific name derived from the seat of pain, or from the primary affection. Hence the unmeaning names of dyspeptic, pleural, dorsal, nervous, rheumatic and venereal phthisis, and many more which tend to confound nosology, and perplex the judgment of the practitioner.

* Recherches, t. i. p. 33.

† RICH. MORTON. Phthisiologia, Lib. 2, cap. vi. Hist. 3.

CHAPTER X.

MISCELLANEOUS OBSERVATIONS.

SECTION I.

ABSORPTION OF TUBERCLES.—CURABILITY OF PHTHISIS.

It has become a trite observation that tubercular consumption is incurable; a remark that is applied without discrimination to every case; and when a patient happily recovers after having had all the symptoms of genuine phthisis, it is generally inferred that his disorder was misunderstood.

Such, no doubt, has often been the case; but that tubercular disease is sometimes susceptible of removal, there can be no question; a position which I think has been amply proved in the preceding pages. This process may be effected in the following different modes:

1. By the destruction of one lung, as in *Case 17*: the patient had probably continued a long time free from consumption, but the recurrence of the disease in the other lung eventually proved fatal. This mode of eradication is of extremely rare occurrence, having myself met with but this solitary example; others, however, will be found in the writings of almost every practical pathologist.

2. By the evacuation and subsequent cicatrisation of abscesses. No better example need be adduced or de-

sired than *Case 28*, in which the disease was almost wholly eradicated, although both lungs had been involved.

3. By the absorption of tubercles; on which subject I shall presently offer some details.

It will be said by many, that it is not in the power of art to imitate these spontaneous cures; but may not art promote them? For example, if either tubercles or abscess are found to occupy a circumscribed part of one lung only, may we not, by maintaining the general health, and establishing judicious counter-irritation, sometimes enable the system to overcome the disease?

Such cases, I am convinced, are of frequent occurrence; but, as already remarked; mankind seem rather disposed to question the evidence of their own observation, than admit the removal of a disease, which by common consent has been pronounced incurable.

I saw in the West Indies a considerable number of officers, professional men, and merchants, who had left Europe in the second or purulent stage of consumption. They sought the tropics as a last alternative, and, in their own phrase, came there to die: yet in some of these persons every pulmonary symptom had vanished, while in others the disease was so far mitigated, as to be seemingly passing away. I may in particular cite Dr. Stedman Sen. of Santa Cruz, who arrived in that island fifty years before my interview with him, (April 1834,) with such fearful symptoms of consumption, that the celebrated Dr. Cullen of Edinburgh assured him that he could not survive another Scotch winter. Notwithstanding the desperate features of his disease, on his arrival in the

West Indies, he began at once to improve, his symptoms rapidly left him, nor have they ever recurred in the lapse of half a century. On his subsequent visits to Scotland, he has experienced no inconvenience; and he is entirely of the opinion, that his disease was *eradicated* by change of climate.

Dr. Heberden mentions a case of hereditary consumption that was radically cured by a removal to a hot climate: for at the time of writing the account, there had been no recurrence of the malady, although twenty years had expired.*

These, I grant, are extraordinary instances; but many equally conclusive, though not perhaps of so extreme a character, will be found interspersed through this volume, especially under the head of cicatrisation of abscess: but every physician, nay every man, can recur to others within the sphere of his own observation.

I have been told than when Louis Bonaparte was king of Holland, a division of the French army, five thousand strong, raised in the southern provinces of France, was marched into Holland, and quartered there. Tubercular consumption, in an aggravated form, soon made its appearance among these young men, and so great was its ravages that hundreds were soon destroyed by it. In this state of things, the physician in chief applied to the government to save the remains of the army, by sending

* Comment. p. 305. The same author mentions that Dr. (afterwards Sir Edward) Wilmot, "was so far gone in a consumption that the celebrated Dr. Radcliffe, whom he consulted, gave his friends no hope of recovery; yet he lived to be above ninety years old."

them back to France; which was done accordingly, excepting in the case of those who were already too ill to remove from the hospitals. Among those who were able to return, were many already in the incipient stage of the disease, and whose symptoms were becoming daily worse; yet these became convalescent on reaching the south of France, and no deaths by consumption occurred after the troops left Holland.*

These facts show, in a remarkable manner, the effects of climate in producing phthisis, as well as in arresting, if not eradicating it.

Let us next inquire into the pathological changes that must occur in the lungs of persons who experience a restoration to health. This subject has been elaborately investigated by Laennec; and perhaps it may not be in my power to treat it with much originality, at the same time that in at least one particular I differ from him in opinion.

Every practical pathologist is aware that on examining the lungs, their upper surface often presents a contracted or puckered appearance, accompanied by a depression of the pleura, forming an obvious concavity. These appearances usually occur at or near the apex of the lung; the pleura over and around being more or less indurated, of a darker colour than natural, irregular or even nodular, and sometimes adherent to the pleura costalis.

* The gentleman who mentioned these particulars to me was unable to refer me to his authority, which had escaped his memory. It occurred to me that I had long ago met with a similar statement in the works of Broussais; but I have searched for it in vain.



The above diagram will serve to illustrate some of the appearances in question.

a, a, a, the surface of the lung.

b, b, two retractions of the pleura pulmonalis, distorting its outline.

c, c, c, adhesions.

d, d, d, ribs, intercostal muscles, &c.

If an incision be made into the lung proximate to the retraction, it will be found to present some one of the following appearances.

1. An abscess, mostly of small size,* which at once accounts for the retraction or depression of the pleura, for the latter has simply collapsed upon the cavity.
2. A whitish or grayish mass, more or less resembling cartilage, which has obviously replaced an abscess,

* Because when the abscess is large, the adhesions are so firm as to obliterate the appearances in question.

although no other trace of the latter may remain. This is cicatrisation, and has been already explained.

3. A condensed and inelastic cellular tissue, devoid of air cells, and mostly of a dull, brownish red colour, intermixed with black pulmonary matter. This condition is often very circumscribed, and surrounded at a short distance by healthy structure.

The first and second of these lesions require no additional notice in this place; but the third has been variously accounted for by pathologists, and is, I think, susceptible of the following explanation.

We have shown that when tubercles are secreted in the cellular tissue, they press upon and obliterate the air cells, which, once destroyed, are never reproduced. If, therefore, the tubercles should be removed, the cellular membrane would remain in the condition just described: and that they may be thus removed, without the agency of inflammation, and *by the process of absorption alone*, I have not a doubt.

Laennec was of a different opinion: he considered the depressions of the surface of the lung to be the consequence, in every instance "of true cicatrisation of the structure within;" and although he alludes to the possibility of absorption, it is only when the tubercles have suppurated. He declares tubercular disease to be incurable in its first stage, that nature's efforts to remove it are injurious, and those of art useless; in other words, that tubercles cannot be eradicated until they have first suppurated, or, to use his own term for the latter process—softened.

But it is not at variance with analogy to suppose that tubercles are susceptible of absorption in their first stage, especially when isolated, although their numbers be considerable: and when they are secreted in the semi-fluid form, they ought to be as readily absorbed as when reduced to the same consistence by the suppurative process. The fluid secreted so profusely into the pleuræ in inflammation of those membranes, is absorbed with surprising rapidity; yet the lung, once compressed by it, slowly recovers its original bulk; for the chest will contract more readily to meet the lung, than the latter can expand to the parietes of the former. Hence the long continuance of pressure terminates in an obliteration, sometimes partial, sometimes complete, of the vesicular structure.

Now the pressure of tubercles, let me repeat, obliterates, in an analogous manner, the pulmonary air-cells: the tubercles undergo absorption; and during the process the lung collapses upon itself to fill what would otherwise be a vacuity, and the pleura pulmonalis is necessarily depressed, or retracted in proportion.

That this condition is not a consequence of pneumonic inflammation, is obvious, because pneumonia is susceptible of complete resolution, leaving the air cells as it found them; nor ever causes, so far as I have observed, a puckered or retracted lung: the latter, on the contrary, is mostly observed towards the apex of the superior lobe; it is a common attendant on tubercular disease; and can be attributed to an evacuated and cicatrised abscess, only

when it is accompanied by those appearances which afford unequivocal evidence of a cicatrix.*

I am therefore convinced that tubercles, even in their first stage, are often absorbed; and it is altogether probable that many of the hectic fevers which are cured by change of climate and other means, have originated in tubercular disease that has been removed by timely interposition. The experiments performed by Dr. Baron, on the inferior animals, go conclusively to prove the truth of the position above mentioned, which also appears to have had the sanction of the celebrated Dr. Jenner.†

I am well aware, however, that these local retractions of the pleura may occur independent of tubercles, and in lungs in which these bodies have never existed. In such cases the retraction is no doubt owing to obliteration of the air-cells from chronic catarrh. It may, therefore, be sometimes difficult to decide on the cause of this pathological condition; which, in doubtful cases, must be judged of by the presence or absence of tubercles, and other collateral appearances.

SECTION II.

CAUSES OF SUDDEN DEATH.

Patients with consumption are liable to sudden fatal terminations of their disease, which may arise from a variety of causes.

* See page 161.

† On Tuberculated Accretions of Serous Membranes. By JOHN BARON, M. D. *passim.*

An occasional, but by no means a frequent cause, is the accession of haemoptysis, especially after indiscreet exertions of strength, as in lifting weights, rapidly ascending stairs, &c. Haemoptysis may cause death in two different ways: 1. by the quantity of blood lost; and 2. by its accumulating in the air passages and suffocating the patient.

Another and more frequent cause, is effusion into the bronchia. This effusion, as it is improperly termed, consists in a sudden and inordinate secretion from the bronchial membrane, of a muco-serous fluid, which the patient has not strength to expectorate, and suffocation necessarily follows. A man who had an abscess in his left lung, died to the surprise of every one, immediately after having eaten his supper. On examining his lungs they were found in the condition just mentioned, excepting that the secretion was slightly sanguineous, and so profuse that the bronchia of the affected side were completely filled with it. *Case 34* contains the details of a similar example.

Patients are sometimes suddenly carried off by the bursting of an abscess. An instance of this kind occurred not long since in a most estimable lady, who had been several years under my professional care. She at length began to decline rapidly with all the symptoms of confirmed phthisis. Early one morning being summoned in haste to see her, I found her calm, conscious and resigned, but nearly speechless, and in the agony of death from the accumulation of fluids in the air passages, which she had not strength to expectorate. Her death, however, was perfectly tranquil. Her lungs were examined

by Dr. Jackson and myself, when this sudden change in the condition of the patient, was found to have proceeded from the bursting of a large abscess, which choked up the bronchia and caused suffocation. This abscess was in the superior lobe of the left lung. Immediately above it was another, equally large, full of pus, and seemingly without any communication with the bronchia: so that had the patient succeeded in expectorating the contents of the first abscess, the inundation of the second would soon have followed and destroyed life.

Œdema of the pulmonary structure is occasionally so sudden and so profuse, as to cause almost immediate death. The most surprising instance of this kind with which I am acquainted, occurred in the practice of Dr. Gillingham of this city. A lady who had been confined about three weeks previous, and appeared to be in good health, was seized, while sitting up in bed, with extreme oppression at the chest. She fell back and expired in a few minutes. Dr. Gillingham and myself examined the body, when the whole pulmonary tissue of both lungs was found engorged with limpid serum, to a degree that at once accounted for the catastrophe. In this case the œdema appeared to be idiopathic; there was no tuberculous or inflammatory disease of the lungs, or dropsical affection elsewhere; but I cite the case in proof of one of those causes of sudden death, which had previously appeared to me to be in a great measure hypothetical. Subsequently I have often met with œdema of the lungs, both partial and general; but where it is complicated with various morbid conditions, it is not always possible to say

how far its immediate agency has caused the termination of life.

The sudden accession of profuse diarrhoea, not unfrequently exhausts the remaining strength of the patient, to a degree that proves fatal in a very short time.

I have met with a solitary example in which the violence of supervening pleuritic cough occasioned cerebral apoplexy, of which the patient immediately died, as was proved by the autopsy. (*Case 18.*)

There is, perhaps, a cause of sudden death more common than is generally supposed; viz. the irruption into the bronchia, of fluids which have accumulated in the sac of the pleura. I think it probable that this phenomenon has often been attributed to inordinate bronchial secretion. I have, however, met with but one instance of this termination of phthisis which I was able to identify by a post mortem examination. (*Case 21.*)

The supervention of acute pulmonary disease of any kind, pneumonia, pleuritis, or catarrh, may prove suddenly fatal, either by the fluids they secrete, or by the mere violence of inflammatory action on a system already exhausted by disease. (*Cases 18, 22.*)

SECTION III.

DURATION OF PHTHISIS.

The average duration of phthisis, from its first manifest symptoms to its termination, has been variously estimated in Europe. Dr. Clark has published a very interesting table, from data contained in the works of Bayle and

Louis, "giving a view of the duration of phthisis in 314 cases. The mean duration of phthisis calculated from this table is twenty-three months; but it will be observed that one hundred and sixty two, or more than one half of the cases, terminated in nine months, and the greatest proportion of these between the fourth and ninth months. M. Andral's experience at **La Charite** led him to fix the average duration of the disease in that hospital at two years; which is very near the average deduced from the tables of Bayle and Louis."*

I have not attempted any precise inquiries to determine the average continuance of consumption in this country; but my impression is that it will not differ materially from the preceding estimate.

Cases of constitutional or spontaneous phthisis are occasionally observed, which nothing can arrest, and which pass through all the phases of this malady in the short period of four or five weeks.

The latter period, and even a still more limited one, is by no means rare in tropical climates, in which consumption runs its course with a celerity equal to that of pneumonia in northern latitudes.

On the other hand, every one is acquainted with cases of an extremely protracted duration. I have had in my charge persons whose lungs have been certainly tuberculous for nine or ten years, and whose general health was not sensibly more impaired than it was at the onset. Even where a large abscess exists, the general health

* Treatise on Pulm. Consumption. Am. ed. p. 124.

may be sustained for a long period. On the 27th of April, 1833, I saw a young mulatto man, a waiter in the Alms-house hospital, with a profuse haemoptysis, so that in an hour he lost nearly a quart of blood. On examining his chest, I obtained unequivocal evidence of a large abscess towards the apex of the right lung. On interrogating him, I found that he had laboured with every symptom of phthisis for a twelvemonth previous, and probably had had the abscess most of that time. He continued to attend to his business as usual; and though often troubled with cough, slight haemoptysis and debility, he suffered little or no pain, and his left lung was not appreciably impaired up to the last time I examined him, which was several months before his death. This man, whose case was long familiar to the resident physicians of the hospital, died on the 4th of March, 1835, and his body was examined the following day in the presence of Drs. Skinner, Ely, Bacon, Walker, Hawlings and myself. The diagnosis was completely verified: the right lung contained an enormous abscess, lined by a false membrane, and extending from the apex of the lung to the base of the middle lobe. The remainder of the lung was oedematous, partially indurated, and contained disseminated tubercles.

The left lung contained a small circumscribed cavity at the base of the superior lobe and there were two or three small cicatrices still lower down. The bronchia were highly inflamed throughout, and the bronchial glands were enlarged and very hard. The interval between the detection of this man's abscess and his death was a year ten months and seven days.

Phthisis after having appeared in the acute form, occasionally becomes *latent*, without being removed, and is liable to reappear whenever certain exciting causes affect the system. The following is an illustration.

A clergyman of Pennsylvania, was attacked nearly twenty years ago, with consumptive symptoms, which made rapid progress. He was advised to go at once to the West Indies; spent a winter there, and returned seemingly restored. But his native climate proved inimical to his health, for all his symptoms recurred in a very short time. He then removed to Charleston, in South Carolina, where a more genial climate again restored him to comparative health. But that his disease is *latent*, and not eradicated, is evident from the following fact, viz. that whenever he has ventured to pass forty eight hours on Sullivan's Island, a few miles below Charleston, and exposed to a mixed sea and land air, he finds his lungs greatly irritated, his cough returns, and even his long dormant hectic reappears: and he assured me that he had no question that a few weeks' residence in that ungenial atmosphere, would irreparably destroy his health.

Thus where tuberculous matter is not absolutely removed from the lungs, its progress may be arrested, and kept at bay, until some new excitement calls it into action.

Phthisis is in some cases protracted through many years, owing to the formation of small abscesses at long intervals, each abscess throwing off a mass of disease, and leaving the system for a time in a state of comparative health. In these intervals the patient, in a conside

rable degree, recovers his strength, and is able to support the drain consequent to a recurrence of the suppurative process.

In the month of December, 1834, I was requested to see Mrs. S. T. late of St. Albans, in Vermont, and now of this city. She was of an extremely thin and delicate person, with very dark hair and sallow complexion. She informed me that she was 64 years of age, was the mother of eleven children, and had suffered with pain in the left side (chiefly beneath the clavicle and in the axillary region) with cough and occasional fever, for forty-five years; and that twenty-five years ago she had an attack of hæmoptysis, consisting of florid, frothy blood, in considerable quantity. The cough and fever, then became much worse, were liable to aggravation by every change of weather, and have continued ever since accompanied by habitual languor and debility. During twenty-three years of the above twenty-five, she was accustomed to use great bodily exertion without regard to weather, often exposing herself to cold, wet and fatigue, in a rigorous climate. Within the past two years, however, she has resided in this city, has been much less active, and much more complaining. Her expectoration is decidedly purulent, and her fever hectic. On applying the stethoscope, I readily detected a small abscess beneath the apex of the left lung, around which spot to a great distance, the respiration was extremely defective. The upper lobe of the right lung was almost equally defective, but gave no evidence of a cavity.—In this example, habitual activity of body and mind has kept the malady at bay for a very long series of years; but as exer-

tion gives place to indulgence, the disease assumes a more acute character, and makes more rapid progress.

Two years have elapsed (Dec. 1836) since I made the above memorandum; and I may now add, that my patient, after an exacerbation of disease during the last summer, and extreme debility in consequence, took a long journey to her former residence in Vermont. She came back much recruited; but inactivity has again reduced her strength, which she assures me is exactly in proportion to the exercise she uses in the open air—the only remedy I have ever prescribed for her.

There is good reason to believe that in this instance tuberculous disease has continued for forty-seven years. How much of this time the abscess has been in the lung, is impossible to say; but the patient assures me that she has had, for twenty-seven years, the same expectoration, febricula and slight but frequent haemoptysis, that she labours under at present; rendering it more than probable that her lung has been ulcerated during the whole of that long period.* When she now rises in the morning, her debility is so great that she feels wholly incapacitated for bodily exertion; but knowing, from experience, that nothing else can keep her disease in check, she persists in making great efforts, takes long walks daily, and feels comparatively strong and refreshed during the afternoon and evening.

“A very dear friend of mine,” says Dr. Latham, “was

* Just before sending this sheet to the printer, I read the above statement to the patient herself. She assured me that it was correct in every particular; but added that if she might judge from her own sensations there was not one abscess only, but *three abscesses* in her left lung. It was not convenient for me at the moment to re-examine her chest by auscultation.

twelve years dying of consumption; and another individual was twenty. They had expectoration and hectic fever, coming and going, during twelve and twenty years; but they died before the days of auscultation, and therefore, the exact condition of the lungs at different periods during the progress of their disease was not known. I know a man now living, who occasionally spits blood and pus, and who has occasionally spit blood and pus during the last twenty years;" and Dr. Latham, adds that an abscess had existed in this patient's chest for four years antecedent to the publication of the case.*

The duration of phthisis is greatly modified by the peculiar functions of the female constitution. During the period of pregnancy, the morbid action is suspended in the lungs, while all the resources of nature are devoted to the uterine system.† Lactation produces in degree the same effect; and it is thus that child-bearing women, although decidedly consumptive, enjoy a state of comparative health for many years: but the disease is only latent, and prone to recur with fatal violence whenever this

* Lectures on subjects connected with Clinical Medicine, 1836.

† On this subject, however, as on most others, there have been two opinions; take, for example, the following observation from DEMALET: "L'expérience de tous les jours nous apprend que les femmes phthisiques qui deviennent enceintes parviennent très rarement à terme; et leurs fausses-couches comme leurs heureuses délivrances accélèrent le progrès de leurs malheurs." *De la Phthisie Pulm.* p. 127.

These remarks however, can scarcely be applied even to women who become pregnant in the advanced or purulent stage of consumption: I grant that in such subjects abortion is apt to follow; and even after delivery at the full period, the disease sometimes resumes its sway with destructive violence. Yet even in these cases life is mostly prolonged; for if pregnancy had not supervened, the chances are that the disease would have destroyed the patient in half the time allotted to utero-gestation.

check is removed. A young lady, who was attacked with the worst symptoms of phthisis, was soon after married, and at the usual period became a mother. She bore eight children in eleven years, (seven of them being now alive and well,) and throughout all that time had no other evidence of her pulmonary affection, than an occasional catarrh, or slight hæmoptysis; and in the opinion of her friends enjoyed good health. After her eighth parturition, however, her system became enfeebled and pregnancy did not recur; her consumptive symptoms then reappeared with redoubled violence, and carried her to the grave in a few months.

In another instance I observed a paroxysmal catarrh that had been latent more than eighteen months, recur with great force within forty-eight hours after the patient had weaned her child: nor was the disease checked until the occasional use of artificial drains by means of blisters, gradually superseded the effect of lactation.

SECTION IV.

ON THE INCOMPATIBILITY OF CONSUMPTION WITH INTERMITTENT FEVER.

This is a question of great interest, which has been somewhat elaborately investigated in some parts of Europe; and I am induced to notice it in this place, because I believe very little attention has been paid to it in reference to this country.

The consumptive people of Flanders remove to the marshy parts of their country, where intermittents prevail, from a conviction that the latter disease will arrest the

pectoral affection. The same practice has been tried and lauded in England.

Dr. Hennen asserts, "that those of the Ionian islands which are decidedly most malarious and remarkable for remittents, have had fewest pulmonary affections amongst the British troops."* This observation is confirmed by Dr. Copland, and is by many European physicians believed to hold good as a general rule.

It is well known that all tropical climates are more free than others from consumption, while they almost all suffer greatly from intermittent fever: such is the case in the islands of the Indian Archipelago, Bengal, the West Indies, Peru, &c. yet it remains to be proved that the prevalence of one of these diseases is the reason of the comparative absence of the other. The climate of the Tropics tends constantly to produce those miasmata which are the source of fevers, while the same atmosphere seems remarkably congenial to the pulmonary system. I never could find that persons who in these latitudes are subject to intermittents, are more exempt than others from pectoral affections.

In the United States, consumption seems to prevail in proportion to the degree of atmospheric vicissitudes. Thus in the northern parts of New York, and New Hampshire, consumption is extremely frequent in neighbourhoods subject to the annual visitation of intermittents. But the further we go south, or, in other words, the more genial the atmosphere becomes, the less consumption pre-

* Dict. of Pract. Med. Art. Climate.

vails although the sway of malarious fevers is greatly extended.

My friend Dr. Z. Pitcher, of the United States Army, has been quartered on both sides of the Mississippi, and from Detroit to New Orleans, yet he informs me that he never observed the prevalence of intermittent fever to counteract the mortality from consumption.

The valley of the Ohio river is proverbially scourged with intermittent and remittent fevers; and yet it does not appear to possess any obvious immunity from phthisis. To some queries on this subject addressed by me to Dr. Hildreth, of Marietta, I have received the following statement, which I give in the words of the intelligent writer: "I have dwelt in the valley of the Ohio for twenty-eight years, during which period I have studied the diseases most prevalent. Marietta was settled in the year 1788: the country was then a wilderness, and subject to few diseases of any kind. As it became partially cleared of its huge forests, malarious diseases began to appear, most commonly in the form of intermittent fever. Until after the year 1807, when the first great epidemic of malarious fever came amongst us, consumption was scarcely known. In the winter of that year the first epidemic influenza, or catarrh, visited us; after which period consumption became more frequent, averaging about one death a year in about every thousand inhabitants. In 1822 and 1823, the second malarious epidemic passed over the valley, visiting almost every family. Since that time consumptions have gradually increased, until now the yearly average is about two and a half to every

thousand inhabitants. As the country becomes more cultivated, the inhabitants more refined and luxurious in their living, diseases of the chest are more common, and will continue to increase."

Dr. Webb, of Circleville Ohio, makes nearly similar remarks in reference to that section of the country; he says that the inhabitants of the alluvial districts, are subject after their intermittents and remittents, to "hepatic disorders, enlarged spleen, obstructions, &c. very frequently ending in consumption." He adds that while the miasmatic fevers have in no degree abated in frequency or violence, consumption had increased to a frightful degree during the last half of the year 1834: and he concludes his remarks (in a letter to Dr. Hildreth) with these forcible expressions: "I think those persons who have been labouring under protracted intermittents, and have resided on the margins and bottom lands of our streams, are the first victims of that horrible disease, phthisis pulmonalis."

These facts from physicians of eminence and authority, are worth a thousand assertions to the contrary; and contrast strongly with the gratuitous statement of an otherwise intelligent author, who says that "fifty persons fall victims to this terrible destroyer in the Atlantic country, to one that dies of it here."* [In the valley of the Mississippi.]

* FLINT'S Geography of the Mississippi valley, vol. i. p. 39.

Dr. T. R. Beck, of Albany, has furnished, in the following letter, some interesting facts which are worthy of further investigation and comparison:

"I had lately (1823) a conversation with a very intelligent gentleman, (not of the medical profession,) who removed into the western part of this state some fifteen years since, at a time when the extreme parts where he settled

I have said thus much on this branch of my subject, chiefly with a view to engage others in an inquiry which has an important practical bearing.

SECTION V.

DEFORMITY OF THE CHEST CONSEQUENT TO PHthisis, &c.

Deformity of the chest from pulmonary disease is of frequent occurrence, and may exist unobserved by the patient or his friends. It is often caused by adhesions, and sometimes by pleurisy which had been accompanied by serous effusion: thus when the fluid has pressed the lung, and more or less suspended its function, and absorption rapidly ensues, the lung does not expand with sufficient celerity to fill the threatened vacuum; but the ribs, on the contrary, collapse upon the lung. The inequality in the thorax thus induced, is often obliterated during the growth of children, but in adults is, for the most part, irretrievable. It is common in phthisis complicated with pleurisy, but

were generally covered with forests. He remained there until the last year, and has thus been a witness of the change from a state of nature to high comparative improvement.

“ In the course of his remarks, an allusion was made to the great increase of consumption generally; when he observed, that during the whole period of his residence in the western district, until within the last two or three years, that disease was unknown; and individuals coming from the New-England states, with all its indications, were completely relieved, or, as is the common opinion, *cured*. This observation was made in numerous instances. As the ground is clearing and villages are forming, this exemption is now no longer experienced. During the above period, intermittents and remittents were the common diseases.”

“ These facts certainly go to prove the idea advanced some years ago by Dr. Wells, corroborated by observations made in Holland and Lincolnshire, of the comparative incompatibility of intermittents and consumption.”—*New York Medical and Physical Journal*, vol. ii.

occurs also independent of this disease in several different ways:

1. It sometimes follows the extensive development of disseminated tubercles, which, while they destroy the structure of a part of the lung, render the remainder imperfect in function and liable to collapse.
2. When extensive abscesses form in the lung, the collapse of the thorax generally follows in greater or less degree; often so slightly as to escape an unpractised eye, and again so obviously as not to be overlooked by any one. When the disease is nearly equal, and yet considerable on both sides, I have seen the whole upper and anterior part of the thorax distinctly flattened from side to side.

In the autumn of 1834, I was consulted by Dr. I. W. Russell, of Mount Vernon, Ohio, under the following circumstances. In the month of May preceding, he was attacked by a violent pleurisy complicated with pneumonia, which commenced in the lower lobe of the right lung, but soon involved nearly all the lung on that side. When I saw him his disease had continued for five months: he had febricula, slight dry cough in the mornings, debility and considerable emaciation. But the most remarkable circumstance was a great deformity of the diseased side; it was very much flattened and drawn down, the shoulder being obviously lower than the other and the scapula projecting.

On examining his naked chest, it was manifest that respiration was wholly confined to the left side, which expanded and contracted to a preternatural extent, while

the right side appeared to be wholly immovable. The stethoscope could detect no respiratory murmur in the lower lobe, little in the middle one, while the superior lobe, though more respirable, was evidently labouring under great obstruction. About a month later in the season this gentleman came again to Philadelphia, when I re-examined him, assisted by my friend Dr. Turnpenny. The symptoms all remained as above described, excepting that there was a very slight return of respiration in the lower lobe of the lung, and in the upper portion there was also some amendment, and the patient's general health, was much improved. I advised a sea voyage, and he soon after sailed for Rio Janeiro. He returned in June, 1835, much improved in his general health, and with an obvious improvement in the upper portion of the diseased lung: the lower portion had not undergone any appreciable alteration.

I do not know whether there were any tubercles in this case or not; the complicated nature of the disease not enabling me to determine with certainty: but I give the particulars because they form an admirable illustration of deformity of the chest from pulmonary disease; for whether it results from tubercles or from pleurisy, or from these and other diseases combined, its external characters are the same.

When the contraction follows simple tubercular abscesses, it will be most obvious at the top of the chest; the ribs there receding from the clavicle, which becomes more prominent, at the same time that the shoulder is drawn down, and the scapula projects unnaturally. I

have seen this deformity accompanied by local inaction of the corresponding ribs, while the motion of the other parts of the chest was unimpaired.*

The practical inference from the preceding observations is, that in every case of suspected phthisis, the exterior of the chest should be carefully examined.

* See Chapter on Auscultation.

CHAPTER XI.

TREATMENT.

IN many diseases physicians may safely adopt, as the result of their experience, a routine practice, chiefly modified by the degree of violence in the symptoms. It is not so in phthisis; for there is no malady which assumes so many protean forms, and is attended by such diversified complications. Hence I have felt at a loss how to methodise my views, so as to avoid repetition and prolixity. It has occurred to me, however, in the first place to give an outline of the practice that is called for in the different forms and stages of phthisis: 2. to detail the treatment of particular symptoms; 3. to examine separately the merits of those articles of the *materia medica* that are most useful in this disease; and lastly, to devote some observations to clothing, exercise, climate and sea-voyaging.

SECTION I.

GENERAL OBSERVATIONS ON THE TREATMENT OF THE DIFFERENT FORMS AND STAGES OF PHTHISIS.

I. The simplest form of consumption presents itself with a short, dry cough, with very little fever, and imperfect respiration in some part of the lungs; but the pro-

gressive emaciation, pallid countenance, irregular flush, somewhat accelerated pulse, and general loss of strength, aided by careful auscultation, will generally identify the lurking disease. There will be little or very scanty expectoration, and no cavity in the lungs. In fact, the disease is just developing itself in the system; and what is to be done? My directions to such a patient would be very brief. I would at once establish an issue over the seat of the disease, and keep it open by stimulating ointments. The patient should take ample exercise in the open air, use a light but nutritious diet, and go, if practicable, without delay to another climate. This is, indeed, the juncture wherein change of air is likely to be most beneficial. Tonics, in the general way, are uncalled for; but the alteratives, especially iodine and sarsaparilla, are very important, but should never be pushed so far as to impair digestion. I would further advise such a patient to suppress his cough at bed time by a full anodyne; and, as on waking in the morning, the cough, after long repose, recurs with distressing violence, let an emetic be taken at once, by which the paroxysm is shortened, and the lungs at once relieved by a more or less copious expectoration. No emetic is better for this purpose than the sulphate of zinc; and there is no period of phthisis in which emetics can be half so available as under these circumstances. If such a patient cannot go abroad, the best substitute will be found in horse-back exercise, or driving in an open vehicle.

Bleeding, mercury, and confinement to the house, are utterly inadmissible under such circumstances.

II. It not unfrequently happens that active fever accompanies the initiatory stage of phthisis: this condition is most likely to happen in full habits of the sanguineous temperament. The face is greatly flushed, the cough dry, the skin hot, the fever prolonged, and relieved by profuse perspiration: there is more or less hæmoptysis, and a sense of fulness and oppression in the chest. If these symptoms can be traced, by auscultation and other signs, to a tuberculous source, the treatment to be pursued is readily decided. Whether the active disease be inflammation excited by tubercles, or tubercles developed by inflammation, it matters not. A small bleeding should be at once resorted to, followed by cups or leeches to the chest, and then the free use of digitalis, with or without opiates, according to circumstances. If the first bleeding has been of obvious advantage, and the symptoms require a repetition of it, there should be no hesitation in repeating it, and this as often as the nature of the case may require: for if the inflammatory symptoms are permitted to go on, the suppurative stage of the disease is sure to follow. The mere presence of incipient tubercles in the lungs, can constitute no reasonable objection to general depletion in the access of acute disease, whether this show itself as bronchitis, pneumonia or pleurisy. The further consideration of this modification may be merged in the following one.

III. The preceding remarks are equally applicable to those cases, in which acute disease supervenes on chronic phthisis which has not yet passed into the second stage.

It has probably occurred to every practitioner who avails himself of auscultation, to detect the first evidences of a tuberculous lung, on being called to prescribe for what is called a violent catarrh. On examining the chest, the tuberculous disease may be found very extensive; the patient's general health, though previously delicate for months and even years, may not have been to appearance seriously impaired, while the acute symptoms may have been of but a few hours' duration. Suppose we hesitate to remove these by active remedies, because there is a tuberculous condition of the lung, and what must be the almost inevitable consequence? The dormant tubercles are excited to active inflammation, an abscess forms, and the patient may thus, in a very short time, be plunged into the second stage of his malady. I am satisfied that I have seen constitutional phthisis kept at bay for years, by suppressing acute supervening disease in its onset, by the means just mentioned. While such symptoms are in operation, I need scarcely observe, that rest in a quiet and well ventilated apartment, together with the exclusion of all excitement, are essential to recovery. But after the acute symptoms have been subdued, the plan already suggested for the simpler form of disease should be at once acted on; with such modifications, however, as the varied circumstances of the case may require. These will be noticed in a succeeding part of this chapter.

IV. It frequently happens that we are first consulted in consumption, when the disease is already in its second stage. The patient has an abscess, and consequently

purulent expectoration, together with more or less hectic and colliquative perspiration. It is a common impression that when an abscess forms, all treatment is nugatory, or at best palliative. This is a great error. *That* treatment is surely more than palliative which can prolong life for years, even though it does not effect a cure. Again, the existence of an abscess does not preclude all chance of permanent recovery, for I have shown that the latter may take place, even from suppurative tuberculous phthisis. Such examples, as every one knows, are extremely rare, and have even been considered as exceptions to a rule. But these very exceptions should stimulate us to exertion; which, in very many cases, will result in prolonging life, and occasionally, perhaps, in curing the disease. Is a patient to be abandoned to his fate, because he has a cavity in his lung? Certainly not, when we know, that pulmonary abscess may exist for years without material aggravation. What, then, it will be asked, is to be done?

If there be an abscess of one lung which has lasted for a considerable time, if the lung around respires reasonably well, and especially if the other lung, so far as can be ascertained, is free from disease, and all this in a constitution not materially broken, in such a case the establishment of an issue, a sea-voyage, or a long journey has often done much for the patient. Even the simpler precautions of a well adapted diet, and exercise in the open air, will often protract life for a long period, as every practitioner is aware. Whereas, if the same patients had been kept in their chambers, and excluded from the ordinary

sources of health and recreation, the term of life would have been much abridged.

V. There is a fifth and ultimate grade of tuberculous consumption, which, although it may be mitigated by art, is proverbially among the most hopeless of human maladies. The chief that we can do is to combat the symptoms as they arise; to allay pain, check the cough, arrest profuse evacuations, and sustain the wasting fabric. These and other analogous indications are familiar to every physician: yet their importance requires a more extended consideration, which will be embraced in the following section.

SECTION II.

ON THE TREATMENT OF PARTICULAR SYMPTOMS.

I. *Hemorrhagic Symptoms.*—Pathological anatomy establishes three facts to guide us in the treatment of phthisis; 1st, That, the disease primarily invades the apex of the lung; 2d, That it commences by congestion of the parenchyma: and, 3dly, That, in a majority of cases, the congestion is manifested by haemoptysis. It follows, therefore, that the judicious treatment of the latter symptom is of the utmost importance.

It is the practice of some physicians to bleed indiscriminately in all cases of haemoptysis—a plan that has hurried thousands of patients to their graves, by destroying the last remains of strength.* How important, then, is

* If this assertion be thought extravagant, the reader may turn to the *Phthisiologia* of Dr. Richard Morton, wherein venesection is advised to be frequently and copiously repeated, until the patient becomes emaciated and exhausted.

an accurate knowledge of the causes producing it, and of the pathological condition of the lungs at the time the hemorrhage occurs!

Hæmoptysis is often a mere vicarious discharge; thus in females with suppressed catamenia—in persons whose hemorrhoids have suddenly ceased to bleed—in others whose habitual issues or ulcers have dried up, copious hæmoptysis often follows, and is generally removed by restoring the obsolete or suspended function.

It is thus that hæmoptysis is often a salutary process of nature to resolve some morbid condition. Every practitioner has met with examples, wherein the patient has enjoyed better health after the hemorrhage than he had done previously. I have had many cases of this kind in my charge, and designate them a *salutary* hæmoptysis*; for although many years have elapsed since some of them came under my notice, no ill consequences have resulted. Indeed the frequency of hæmoptysis, especially in females, is known only to physicians, to whom this alarming symptom is often communicated with the strongest injunctions of secrecy.

But when hæmoptysis occurs independent of such causes, when it invades the patient in the tranquillity of sleep, or during some great mental or physical effort, it is an almost unequivocal manifestation of what is expres-

under the operation! (*ut macilentus et tabidus fuerit æger.*) See also Barry on consumption p. 228.

* One of my medical friends informs me that he has, during six years, repeatedly witnessed hæmoptysis in an irascible female, in whom this symptom invariably follows a paroxysm of rage and vociferation. As the latter goes off, the hemorrhage disappears. In this instance the mental excitement induces pulmonary congestion, which relieves itself by hæmoptysis.

sively termed “weak lungs;” and where there is a predisposition to phthisis, is often a precursor of its development. Even here, the varieties of constitution require equal variation in the treatment.

In persons of general good health, in a first attack, the pulse being strong and the system feverish or excited, bleeding from the arm is indispensable; and the free and timely recourse to it may save the patient from the most hopeless consequences. Ten or twelve ounces of blood, taken rapidly from a large orifice, may divert the current of the circulation, and relieve the pulmonary congestion. With this primary precaution may be associated some internal remedies, such as spirits of turpentine, elixir of vitriol, common salt, opium, sugar of lead, &c. Any one of these, repeated a few times at short intervals, will answer a good purpose. If by these means the hemorrhage is not speedily relieved, let the patient be cupped on each infra-clavian region: but whether the cups be necessary or not, it is always desirable to establish a drain there, in the first place by a blister, and subsequently by an issue, or tar-tar-emetic plaster. Perfect rest, and a diet of gum water and farinaceous food, will generally restore the patient so much in the course of a week or ten days, as to permit of removal to the country, which is of the utmost importance to convalescence; for what most promotes the general health, will most promote absorption of the effused blood,—without which process disorganisation must rapidly follow.

The danger of inducing a return of the hemorrhage, is often urged against sending patients to the country

soon after an attack of this kind. I believe with Dr. Beddoes, "such objection to be totally unfounded. In hæmoptysis and pulmonary hemorrhages, I never observed any bad consequence from travelling in a carriage: on the contrary, I have known these discharges to stop on a journey, though previously they had, for many days, occurred at least once in twenty-four hours."* I fairly tested this fact in a young man who asked my advice in the month of January of the past year. Auscultation proved his right lung to be tuberculous; and he had all the ordinary symptoms of consumption, but of these hæmoptysis was the most severe and alarming. The depletory plan, by bleeding &c., was carried as far as the circumstances allowed; but the hemorrhage recurred about every two weeks, and on some occasions he spit nearly a pint of blood at a time. I then advised travel. He went by the public conveyances to Cincinnati; and on his return rode the last four hundred miles on horseback. It is a remarkable fact that this gentleman never had the slightest recurrence of hemorrhage during this long journey, which occupied him two months. Soon after his return he had again a slight spitting of blood: I at once established an issue beneath the right clavicle, since which time (now four months) the bleeding has not recurred: although his general health has of late become manifestly more impaired.

When, however, hæmoptysis takes place after a protracted and unequivocal manifestation of other phthisical symptoms, when under such circumstances it recurs at

* Observations on the Management of the Consumptive, &c. 1801.

short intervals—and above all where a considerable abscess exists in the lung, a totally different treatment is demanded. To bleed from the arm or otherwise to reduce the strength of the patient, is, in such circumstances, for the most part, inadmissible; for what good can be expected from reducing the strength of a person, who suffers a perpetual depletion from a pulmonary abscess? The chief that we can do in this variety of hæmoptysis, is to check it by the internal use of the medicines already named, and the establishment of an issue below one or both clavicles. Tonic and alterative medicines, such as will be hereafter mentioned, are also extremely important. The emetic plan of treatment has been much advocated by some practitioners, but I have seldom been tempted to try it. My objection may be grounded in prejudice, but I am disposed to resort to gentle means in preference: should these prove ineffectual, I would no longer hesitate to prescribe an emetic.*

In the treatment of hæmoptysis, much often depends upon having the shoulders of the patient somewhat elevated, enjoining perfect rest, and prohibiting conversation.

Once for all, I must denounce the practice of applying cold to the surface of the body at the commencement of a pulmonary hemorrhage; it is contrary to every principle of pathology; for it forces still greater quantities of blood to the lungs, thus increasing the hemorrhagic congestion, and rendering the recurrence of the disorder more alarming than its onset.

* Vide ARMSTRONG'S Pract. Illustrations of Scarlet Fever, &c. p. 295. London 1818.

Yet where the preceding remedies have been unavailingly tried, and ten or twelve ounces of blood have been lost, I have no hesitation in applying ice, or cold in any other form, to the back of the neck, or to the genital organs. I met with an example in which all other means were unavailing; but the operation of ice to the neck was immediate.

In the same patient (a medical practitioner of this city) the hæmoptysis appeared, on another occasion, to be speedily arrested by a dense tar vapour from the accidental combustion of about a pint of that substance, which had been previously used in the form of a gentle inhalation. Perhaps the mere fumes of resin might prove serviceable in some instances, and especially where the hemorrhage is merely bronchial.

We have shown* that congestion often occurs without hæmoptysis; it is mostly fixed in the superior parts of the lungs, and, in a robust person, should be treated by venesection proportioned to the strength of the patient, by cups to the chest, and by a blister extending across the infra-clavian region. The feet should be at once put into a hot saline pediluvium, and the case in general treated as in hæmoptysis.

II. Catarrhal Symptoms.—It has been aptly remarked by Dr. Wilson Philip, that the mildness of the first symptoms of phthisis constitutes a great barrier to efficient practice; for we can scarcely persuade a patient that he is in danger when he suffers no pain, and scarcely any positive inconvenience; and yet, under these very circum-

* Vide Chap. I. Congestion of the Lungs.

stances, a fatal malady may be undermining the springs of life.

Without suspecting every protracted cough to be a harbinger of phthisis, it is well to remember that not only can consumption excite a cough, but a cough also may induce consumption; whence the importance of getting rid of catarrhal affections without delay.

When, however, catarrh becomes protracted, and is attended by emaciation, languor, and some fever towards or in the night, it requires great attention. It is most readily removed by leeches or cups to the infra-clavian regions; together with the frequent use of gum water slightly acidulated with lemon juice, and containing a little morphia and emetic tartar.*

If the catarrh be of an aggravated form, whether in the first or in the more advanced conditions of phthisis, and especially when, as often happens, the cough is almost incessant, full doses of morphia should be administered,

* The following prescription will be found a good one:

R.—Mucilaginis gummi arabici,	3xvj.
Syrum tolutani,	3ij.
Morphiæ sulphatis,	gr. iss, vel ij.
Antimonii tartarisati,	gr. ij. Misce et signa.

A table-spoonful to be taken every two hours. When from any cause the antimony is objectionable, it may be replaced by a drachm or two of sp. nitri dulcis.—At the same time acidulated gum arabic water should be freely taken by the patient.

Another prescription to which, from extensive use, I am extremely partial, is the following:

R.—Syrup tolutani	3ij.
Extr. belladonnæ	gr. xvj.
Vini ipecac.	3i.
Syrup. senegæ,	3ss.

M. A tea-spoonful to be taken four times a day, using gum water freely as a drink.

and repeated at intervals until repose is procured for the patient. At the same time, as a general rule, it is best to delay the use of anodynes until bed time, and then administer them in such doses, and at such intervals, as shall suspend the cough by forcing sleep. A blister to the chest sometimes gives relief; but if a blister be large, and kept open by irritating substances, it not unfrequently aggravates the fever, and consequently the cough, dyspnœa and other symptoms. Blisters, therefore should be so cautiously managed, as to create a local discharge with the least possible constitutional distress.

But I am convinced by incessant observation, that no plan of treatment so effectually banishes an incipient catarrh, or relieves a chronic one, as a change from the city atmosphere to the pure air of the country, or a sea voyage.

It often happens that a dry catarrh suddenly supervenes, causing an intolerable cough, and consequent soreness of the pulmonary apparatus. The main object is of course to restore the mucous secretion, which at once relieves the urgent symptoms. I have found a combination of copaiva with Hoffman's anodyne to produce this effect more happily than any other medicines, directing the patient, at the same time, to make a free use of acidulated mucilaginous or farinaceous drinks.

But of this series of symptoms, by far the most distressing and unmanageable is inflammation and ulceration of the windpipe and fauces. Among the constitutional remedies, I have been most pleased with iodine, and the fluid extract of sarsaparilla, administered on alternate

days. Gargles are indispensable, but they should be carefully adapted to the circumstances of the case. Where the fauces are of a bright red colour, dry and actively inflamed, the gargle should be of a bland, mucilaginous nature, as the infusion of slippery elm, flaxseed, gum arabic, &c. Where, however, the fauces are pale, with small indolent ulcers, the astringent gargles are necessary. Of these one of the best is a strong infusion of green-tea, flavoured with honey. Port wine, diluted with several times its bulk of water, forms also an admirable gargle: but where the ulceration is considerable, and powerful astringents are admissible, I know of nothing so effectual as the watery solution of creosote, diluted according to circumstances.

In other instances I have found the throat affection unmanageable until I have applied, by means of a camel's hair brush, a strong solution of nitrate of silver; not less than twenty grains to an ounce of water. Sometimes the caustic is more effectual applied in the solid form.

As an external application great relief is sometimes obtained from bathing the throat with spirits of turpentine; where this is too active, its strength may be reduced by mixing it with equal parts of olive oil and laudanum. I have also seen great relief result from the use of iodine ointment to the throat.

The important subject of inhalation I defer for another page.

We occasionally hear of consumptions that have been cured by the constant use of gum arabic, the kernels of the common black walnut, &c. These supposed con-

sumptions have of course been cases of bronchitis which might have terminated in phthisis, had not the cough, and its attendant constitutional symptoms, been overcome by the constant use of articles which, by supplying the fauces with an artificial mucosity, prevent that dryness of the throat which excites cough.

The *dyspnoea* is often oppressive, and mostly paroxysmal. It may be greatly mitigated, and occasionally removed, by a hot saline pediluvium, together with the internal use of a combination of camphor-water and Hoffman's anodyne.*

Where these measures do not afford relief, resort should be had to a small blister placed transversely beneath the clavicles; or, if the symptoms be urgent, a mustard plaster may be substituted for the blister. In cases where the oppression is obviously caused by a sudden accession of catarrh, the latter may require cups† or leeches to the chest, or even venesection. In persons who cannot bear the loss of blood, dry cupping between the shoulders is often serviceable.

III. Febrile Symptoms.—When the hectic is severe, with a full hard pulse, especially at the onset of acute phthisis, bleeding is indispensable, though it must be appealed to with caution. I may here repeat that if the pulse becomes more frequent and irritable after venesection, (and this

* R.—Aquæ camphrœ,
Liquor. anod. Hoffmanni, 3iss. M. et signa.

Dose a table-spoonful every hour or two hours.

† Leeching to the chest is mostly objectionable on account of the tediousness of the process, and consequent long continued exposure of the surface: on this account cups are greatly preferable.

often happens,) I avoid its repetition, and commence the use of digitalis. The fever may be much allayed by the neutral mixture, acidulated mucilaginous drinks, with or without spirits of nitre, and by sponging the limbs with cold vinegar and water. The bowels should be regulated by magnesia, or small doses of the neutral salts, carefully avoiding all drastic or irritating purgatives. Carriage exercise in the open air, should be resorted to as soon as practicable, and will be found to have a surprisingly restorative effect on the patient.

The testimony of Sir William Fordyce is very strong on this head: "I have frequently seen the necessity of quitting London," says he—"to temper heat, and compose the hurry of the circulation, where the hectic had been continued for five or six weeks in despite of the best medicated regimen; and oftener than once I have known the patient return to town in twenty four hours as free from both as if neither had formerly existed."*

One of the most exhausting consequences of hectic, is colliquative perspiration or night sweats. The most effectual check consists in sponging the limbs, and parts of the body, twice a day with a solution of a lime in spirits, an ounce of the one to a pint of the other. To this may be added the internal use of a strong infusion of sage, taking thrice a day a wine glass full with eight or ten drops of elixir of vitriol. In many instances a dose of the mixture taken every night at bed time, will prove effectual. I have also, in one instance, derived signal

* On Hectic Fever.

benefit from the use of prussic acid; and also from a combination of sulphate of iron and alum.

IV. Pleuritic Symptoms.—The pleuritis that so constantly attends consumption, is not unfrequently the sole source of pain to the patient; and it is especially severe in the advanced stage, when the strength is wasted by accumulated disease. A few leeches or cups over the affected part, followed by a small blister, and this again by a poultice of bran and flaxseed, in the manner recommended by M. Broussais,* will mostly give present relief. But as the pleurisy in these cases is mostly a sequel of abscess of the lungs, the former is equally difficult to cure with the latter, and in fact is often susceptible of palliation only. But fortunately, even the pleuritic stage of phthisis is frequently unattended by pain; for I have repeatedly after death found old and firm adhesions of the pleura, of which no indication had existed during life. When acute pleurisy attacks the inferior lobes of the lungs, attended with pain aggravated by the respiration and cough, it is mostly advisable (unless contra-indicated by great debility) to bleed from the arm, and immediately afterwards use local depletion: for if these attacks be not speedily checked, effusion into the pleura will soon follow, and the patient's symptoms become more complicated, distressing and unmanageable.

V. Gastric Symptoms.—The pain of phthisis is often confined to the stomach and bowels, and occasions great distress. Bathing over the seat of pain with a mixture

* Phleg. Chron. t. i.

composed of equal parts of spirits of turpentine, sweet oil and laudanum, affords great relief. In other instances leeching is advisable, especially where the gastric affection causes fever, or increases that which pre-existed.

Constipation is a common and troublesome symptom, and is sometimes attended with severe pain. Those kinds of diet which dispose to a contrary state should be resorted to, especially the use of ripe fruits: a pill taken nightly, composed of two grains of rhubarb, and the same quantity of extract of jalap will, for a time at least, obviate the difficulty. But in the advanced state of phthisis, when the stomach becomes delicate and all medicines irritating, injections may be advantageously substituted. These, however, should be used with great caution at first, for fear they may induce diarrhoea: thus an enema of half a pint of simple flaxseed mucilage may be first tried, and will often be found sufficient; and when something more stimulating becomes necessary, a little common salt should be added. When vomiting arises from violent efforts to expectorate, it is of secondary consequence; but if it occurs from gastric irritation, we can not do better than resort to leeching, topical bathing and spice plasters, with occasional small doses of subcarbonate of soda in cold seltzer water, or lime water and milk. The milder tonic infusions will sometimes assist in relieving this kind of distress.—Simple ice water, in frequent small quantities, or ice allowed to dissolve slowly in the mouth, will often subserve the same purpose.

Diarrhoea, in whatever stage of phthisis it may occur, is most readily subdued by injections of morphia dissolv-

ed in gum water, flaxseed infusion, or some other bland mucilage. It is well, at the same time, to give occasional table-spoonful doses of simple camphor water, which conduces to the same end, and has also a slightly anodyne effect.

I have also employed, with signal benefit a mixture of camphor water, laudanum and nitric acid:^{*} and where other means have failed, very small doses of calomel, combined with ipecacuanha and opium,[†] have been found effectual. The bark of the common dog-wood (*cornus florida*) made into a pretty strong infusion, constitutes a valuable auxiliary. A Moorish physician of Tunis informed M. Orban, that a constipated state of the bowels was the best symptom in consumption; and that, to promote it he gave, daily, two grains and a half of alum with an equal quantity of sulphate of iron.[‡] I have repeatedly availed myself of this hint, with the most decided success, in combatting the diarrhœa of phthisis:

* R.—Aquaæ camphoræ,	ʒ. iv.
Acidi nitrici,	gtt. iv.
Tincturæ opii,	gtt. lx. M.

Dose a table-spoonful every two hours. This combination was first used by Dr. Hope.

† R.—Calomel,	gr. j.
Pulveris opii,	gr. ij.
Ipecacuanhæ,	gr. iij.

Ft. pil. vi. One to be taken every two or three hours until relieved.

‡ Good's Study of Med. ii. 771. This plan, among the Moors, was accompanied by the free use of vinegar diluted with water, and sweetened.

The use of acid wines formed part of the curative plan of the Romans. "Ergo vini quoque, sed austeri, necessarius usus est." CELSUS. de Med. lib. 3.—He also advises some kinds of food to be prepared with vinegar. (ex aceto.)

but have generally attained my object by giving two grains of the iron, and one of alum morning and evening.

Having mentioned this plan to Dr. Pitcher, of the United States Army, he put it in practice on two soldiers who appeared to be dying of diarrhœa consequent to phthisis, both of whom were so much relieved as to be able, in a short time, to resume their duties in the garrison. I mention these facts with the more satisfaction, because I believe patients are sometimes allowed to die of diarrhœa, from an impression that it is a mere sequel of the pulmonary affection and therefore incurable. I am decidedly of the opinion, that we should combat the diarrhœa with every means, both internal and external, to the last hour of life.

In cases of obstinate *constipation*, much may be done by attention to diet. The use of bran-bread morning and evening, often supersedes the necessity for medicine: a tea-cup full of cream renders the bread both more palatable and more effectual. Ripe fruits are also unobjectionable. Where the patient's food does not answer the purpose, resort may be had to magnesia and rhubarb, or a simple pill of five grains of rhubarb, taken every night at bed-time. The milder saline aperients are also desirable.

Patients who are harassed with frequent vomitings, should observe an extremely simple diet; no other plan will avail them. Sometimes by confining the *ingesta* to mucilaginous drinks, for a few days in succession, the gastric irritability is greatly relieved, and occasionally

removed. In one instance in which all other food was thrown up almost as soon as swallowed, equal parts of lime water and fresh milk, taken frequently, in small quantities, were retained without difficulty. If milk be objectionable, the lime water may be mixed with infusion of camphor.

CHAPTER XII.

TREATMENT CONTINUED.

OBSERVATIONS ON VARIOUS MEDICINES, AND REMEDIAL MEASURES, EMPLOYED IN CONSUMPTION.

Digitalis.—There is often in the early stage of phthisis a frequent, irritable, hectic pulse, involving great distress, wakefulness and other febrile symptoms, which bleeding only increases, and all external irritants tend to aggravate. The practitioner is naturally tempted to bleed in such a case; nor is it possible for him always to foretel the consequences of venesection: but after it has been tried without any mitigation of the symptoms, he should have immediate recourse to the tincture of digitalis. My success with this medicine has often afforded me great gratification, and from among many instances of its efficacy, I will submit one or two of the most striking.

A young married lady, whose lungs are tuberculous, was bled on the 18th February, 1833, by direction of a distinguished practitioner, who attended her in her accouchment three days after, which resulted favourably; but the cough, dyspnœa and fever to which she had been subject, soon returned, and venesection was repeated on the 23d. The symptoms, however, remained unsubdued,

and she was bled a third time on the 18th of March, but with no better result than before. On the subsequent day a blister was applied, but although it drew well it afforded no relief. Free cupping was then resorted to; but under all this variety of treatment the symptoms, in place of being mitigated, became much worse. Under these circumstances I was requested to see her on the 26th of March. I found her with a hot dry skin, very restless and unable to sleep, with almost constant cough and oppression, and a pulse beating one hundred and sixteen in a minute, strong and cored. I proposed the tincture of digitalis in doses of ten drops, one of which was given at five p. m., and before ten o'clock at night her pulse was reduced to ninety: a second dose was then given, and on the following morning the pulsations at the wrist were but eighty per minute. Half doses were continued thrice a day for two days, and then discontinued, leaving the pulse at its natural standard. With the reduction of arterial excitement the fever almost disappeared, and the cough and dyspnœa were rendered comparatively trifling. This lady soon after made a long journey with benefit, and is now in the enjoyment of comparatively good health, though by no means free from the vicissitudes of her malady.

I have found digitalis to be equally serviceable in those violent palpitations which sometimes accompany phthisis. In a middle aged man thus affected, and whose pulse beat one hundred and fifty in the minute, it was in six days reduced to ninety: at this point it could be kept by occasional recurrence to small doses of the medicine, to the

infinite relief of the patient, who even indulged the fallacious idea that he was cured.

Iodine and its preparations.—Every physician is now familiar with the internal use of iodine in phthisis; and having myself used it very extensively, I am able to express an unequivocal opinion respecting it. In a large number of instances it has appeared, especially in incipient consumption, to arrest or suspend the tubercular secretion, and with it the hectic, marasmus, cough, dyspnœa, and other urgent symptoms. In administering it I have adopted the common formula,* combining it with the hydriodate of potash; but I am cautious to discontinue it whenever it is followed by sick stomach, vertigo, or any of those symptoms usually called *nervous*: for notwithstanding the assertion of Dr. Coindet of Geneva, that he has never seen injury result from its use, several instances have occurred to me, in which the persistence in it would have certainly terminated in very unpleasant consequences.

There are again some constitutions in which it does not appear to produce any obvious effects, either for better or worse; but in a majority of cases, even in the second stage of phthisis, I have been much gratified with the results. Thus it often relieves the dyspnœa, improves the complexion, and restores the appetite, even when the advanced progress of the disease precludes all hope of recovery. A lady has assured me that whenever her

* R.—Iodinæ,	gr. iiij.
Potassæ hydriodat.	gr. vij.
Aquæ distillatæ,	3j. M.

Dose from 5 to 10 drops morning, noon and night, in a little water.

cough, dyspnœa and febrile sensations warn her of a fresh accession of disease, the use of the iodine at once dispels the symptoms, and restores her to her usual health. In another marked case, that of a middle aged man, one of whose lungs has been in a state of abscess for eight months past, I have repeatedly overcome alarming relapses seemingly by the iodine mixture alone.

In some instances it has so obviously improved the nutritive function, that patients have increased in flesh by its use, and at the same time recovered, in a considerable degree, a naturally florid complexion.

I prescribe iodine in every stage of phthisis, avoiding it only when there is much febrile excitement, or when it produces the objectionable consequences already mentioned: but its use should be governed by the adage, that “there is nothing in our art that does good but may also do harm.” I have met with patients who could not take it for two days together; and in two instances it produced a kind of pseudo-ptyalism, rendering the gums extremely sore and spongy. In one of these cases the effect was produced by five doses of the medicine.

Prussic Acid.—The difficulty of obtaining prussic acid of a uniform strength, has, in this country, associated its name with suspicion and uncertainty. These considerations long prevented my using it; but since I have made trial of it I have had great reason to be pleased with the results.

Prussic acid has an obviously anodyne effect: it allays pain, and induces sleep when opium or morphia are ineffectual; it reduces the hectic pulse and dyspnœa, and,

above all, calms the consumptive cough. In those forms of phthisis which have been called catarrhal and pneumonic, this medicine acts with surprising promptness and efficacy.

The use of prussic acid requires great caution, and its exhibition may be governed by much the same precautions that have been suggested in respect to iodine: sick stomach, dizziness, or diarrhœa, when obviously resulting from the use of the acid (and they sometimes follow the first two or three doses,) are monitions that it does not suit the patient's constitution.

In prescribing prussic acid I have mostly confined myself to a single prescription, which is a slight modification of that recommended by Dr. Granville of London,* to whom the profession is indebted for much valuable testimony in its favour. Let half an ounce of gum arabic be dissolved in seven ounces and a half of water, to which add half an ounce of syrup of tolu and twelve drops of prussic acid, prepared according to the formula of the London Pharmacopœia. Of this mixture, a table-spoonful may be taken every three hours—a medium dose which I prefer in commencing the use of so powerful a medicine.

Sulphur.—Sulphur was at one period called the *Balsam of the Lungs*, and although its efficacy in pulmonary affections was often exaggerated, I am convinced that it is a most valuable remedy. It has an obvious controul over catarrh, keeps up a uniform exhalation from the

* On the Internal Use of the Hydrocyanic (prussic) Acid, &c. London, 1819.

cutaneous surface, and regulates the bowels. Its efficacy in cough is greatly augmented by combining it with co-paiva in an emulsion.

Uva ursi.—The strong recommendations of this medicine contained in the work of Dr. Bourne of Oxford, led me to several trials of it. The result is, that I have been highly pleased with its use, especially in those chronic catarrhs of old persons which often simulate phthisis, without being connected with tubercular disease. I have found an advantage in combining the powdered uva ursi with subcarbonate of potash or soda.*

Sarsaparilla.—The compound extract of sarsaparilla, as now made in this city, is certainly the most efficient alterative medicine we possess, after mercury, and I have in some instances, even of tubercular disease, seen it produce a renovation of health truly surprising: it seems at once to improve the secretions, restore the appetite, and increase the strength of the patient. The timely interposition of alteratives, in the incipient stage of phthisis, promises important results; and of this class of remedies few can be used with the same certainty and safety as sarsaparilla. Where there is an obvious scrofulous taint in complication with the pectoral disease, I habitually combine this medicine with the hydriodate of iron.

Tonics.—Many practitioners, fearing to aggravate an inflammation, hesitate to use tonics until, from the exhausted state of the system, they can be of no use. Dur-

* R.—Pulveris uva ursi, potassæ subcarbonatis, $\text{ââ. } 3\text{j.}$ To be divided into twelve powders, one to be taken every three hours in sugar and water. Dr. Bourne gave fifteen grains of uva ursi in milk, at bed-time.

ing the presence of active fever they are injurious; but under other circumstances they may be given in every condition of phthisis. I have chiefly used the wild-cherry bark, (*prunus virginianus*) and the Virginia snake root. The former is one of those mild, but decided tonics, which supports the strength without increasing the constitutional irritation. I am averse to the use of this class of medicines in the form of tincture; they increase the fever and enfeeble the stomach, although their stimulant effect may produce a seductive, yet very temporary relief, to the invalid.

The mineral acids, the preparations of iron, the sulphate of quinine and the extract of gentian, either alone or in combination, are invaluable adjuvants in the tonic plan of treatment.

Narcotics.—These generally increase the fever, and consequently the languor of the patient; but without them sleep is sometimes unattainable, and they constitute the least of two evils. The sulphate of morphia is perhaps the most certain and least irritating; but the dose requires to be greatly increased, or it loses its effect. I have derived great advantage from changing one preparation of opium for another, giving for a week or more the morphia, then substituting opium, laudanum or paregoric, and finally the acetum opii or black drop. Thus where half a grain of morphia has no longer induced sleep, twelve drops of the black drop, taken in a table-spoonful of camphor water or neutral mixture, has acted like a charm. Where all the preparations of opium are found to have a deleterious effect, I have occasionally used the extracts

of *hyoscyamus*, *cicuta*, and *belladonna* (and especially the last) with great advantage. Hoffman's anodyne,* and the preparations of camphor should not be overlooked.

Of the *lactucarium*, so strongly recommended by Dr. Duncan, we know but little in this country; which is much to be regretted, as it certainly appears to be a valuable substitute for opium.

The syrup of hops has a gently anodyne effect, but its extreme sweetness soon renders it disagreeable. Dried hops, sewed up in the form of a small pillow yield a most agreeable aroma, which I have found highly grateful and tranquillising to some constitutions.

Fumigation and Inhalation.—It is by these means only that substances can be applied directly to a diseased lung; and when we recollect that vapours are, by this process, freely received into all the air-passages and cells, and even into the abscesses, with which the bronchia almost invariably communicate, how important is it that we should avail ourselves of this adjuvant in the treatment of consumption!

But the careless manner in which inhalation is usually regulated, has brought it greatly into disuse; and in truth, I have, from this cause, sometimes seen it do more injury than good.

The common plan of burning tar, resin, myrrh and other substances in the chambers of the sick, I have occasionally found to add to the distress of the patient, owing to the disengagement of an empyreumatic smoke.

After a fair trial with various substances, there is no

* As directed in *Dyspnœa*.

one which I have prescribed in this form with equal success to tar in combination with subcarbonate of potash, in the manner recommended by Sir Alexander Crichton.*

Thus an ounce of potash is added to every pound of tar, in order that the latter may be deprived of its pyroligneous acid. The two ingredients being well mixed, should be first boiled for a few minutes in the open air, in order to disengage any impurities, and then be kept at a simmer in the room of the patient. This is readily effected by putting the composition in an iron vessel, and placing the latter over a spirit lamp, or some analogous contrivance.

In this way not only a chamber, but an entire house, is speedily pervaded with a most agreeable vapour, which, although it may at first excite some disposition to *cough*, both in healthy and sick persons, very soon, in a great majority of cases, allays this symptom, and with it a great proportion of the patient's distress. In truth, I have seen it act like a charm. The very first case, in which I employed it, was that of a lady who had recently lost both a brother and a sister by consumption, who herself had a lung disorganised by tubercular disease, and a constitution that had already suffered greatly from this cause. From the day that she commenced the tar inhalation her cough almost entirely disappeared, and all her other symptoms became, and still continue, greatly alleviated, excepting the pleuritic pain between the shoulders. Unpromising as this case was for a first experiment, the result was so pleasing that I gladly extended the same means

* *Practical Observations on Pulmonary Consumption, passim.*

to other patients; and I can most strongly recommend it in tubercular consumption, as a palliative of its most harassing symptoms, and in the catarrhal and pneumonic forms of phthisis as a cure. But I agree with the author just quoted, that in any case where the skin is hot and dry, and the expectoration scanty, the tar vapour can scarcely be of service; and I am also free to acknowledge, that instances have occurred to me wherein the preceding symptoms were absent, and yet the vapour appeared to irritate, rather than tranquillise, the pulmonary organs. These exceptions, however, have been very few, and such as necessarily occur in any plan of treatment. In chronic catarrh, especially when attended with ulceration of the mucous membrane (catarrhal consumption of the systems,) I know of no plan of treatment that can vie with this: the same remark will apply to those morbid conditions left by pneumonia and pleurisy, especially when accompanied with purulent expectoration and dyspnoea.

Tar fumigation was employed by the late Dr. Rush of Philadelphia, upwards of thirty years ago. His plan was to boil together equal parts of tar, bran and water. The above plans, however, may often be superseded by simply heating tar in a spoon over a lamp, and thus inhaling the fumes.

I have not yet tried the iodine inhalation as recommended by Sir Charles Scudamore, because I have not met with any precise rules for its regulation; nor have I any dependence on the vapour of chlorine, which appears oftener to irritate than tranquillise the cough.

The most promising cases for the employment of this

class of medicines, are chronic bronchitis, accompanied by ulceration of the air-passages; or in those varieties of tubercular disease which are complicated with distressing catarrhs: it is obviously impossible, however, to foresee their effect; yet a single trial will mostly decide their beneficial or deleterious tendency.

There is a mode of inhalation long since recommended by Dr. Pearson of London, which is said to possess a decided controul over the cough of phthisis: I allude to the vapour of ether saturated with cicuta leaves, half a drachm of the latter in powder being kept in an ounce of the former for about a week. A tea-spoonful or two of this impregnated fluid may be inhaled at a time, and repeated thrice per diem, or oftener according to circumstances.

I cannot here omit mentioning a new mode of treating consumption, which has lately been suggested by a highly respectable English physician, Dr. Andrew Dods.* The gentleman in question observed that *tanners* are remarkably exempt from this disease; and upon pursuing the inquiry, he found the observation corroborated by many medical men, as well as by the tanners themselves. Dr. Dods attributes this exemption to the inhalation of that peculiar aroma, or volatile matter, which is constantly arising from the tan-pits, during the process of tanning with bark. He, therefore, recommends that the chamber of the consumptive should be strongly impregnated with this volatile matter, by placing in it a large vessel containing a quantity of the liquor and bark that have been recently taken from a tan-pit; or, where this cannot be

* London Medical Gazette, vol. iii. 1829.

conveniently done, to use the refuse bark of a tan-yard, taking care, however, to change it frequently.

I have myself no recollection of having ever seen a tanner in consumption, not even in the public institution with which I am connected: but I question whether a patient would derive much benefit from the aroma, unless he conjoined with it the hardy exercise of that trade.*

SETONS, ISSUES, &c.

In resorting to these drains, we but imitate nature in her modes of relieving disease. The spontaneous occurrence of a diarrhoea often suspends the cough for many days; emesis, (as in sea-sickness,) fistula in ano, an eruptive disease, and other affections, act in the same manner: but as they can seldom be restricted within salutary limits, and are painful and annoying to the patient, it is mostly desirable to substitute in their place, some more manageable and more local irritation.

Where pain, oppression, or other irritating affections are located, as frequently happens, beneath the clavicles, a caustic issue affords the speediest relief. In using the caustic I adopt a common plan, that of making a circular hole, one inch in diameter, in a piece of soft leather; by placing the latter on the skin, and, then applying the caustic potash rubbed to a paste with soap, the irritation is readily circumscribed. Patients are variously affected

* DR. CHALMERS long ago recommended inhalation from "a strong decoction of oak and Peruvian bark, moderately impregnated with the acid or dulcified spirit of vitriol."—*Diseases of South Carolina*, vol. ii. p. 124. 1776.

by caustic; some bearing it without inconvenience for many hours, while in others a large eschar speedily follows the application. When the eschar separates, the object of course is to keep up a constant discharge from the denuded surface: this may be done at first by basilicon; but subsequently as the irritation subsides, the ointment of savin or mezereon becomes necessary.*

I have usually chosen the subclavian, and lower sternal regions, for these applications; but I think it is M. Portal who says, that he observed equal advantage from placing them on the upper part of the arm, in the deltoid muscle.

The use of issues requires some precautions: in very irritable constitutions, and in patients who labour with active hectic fever, they not unfrequently add to the irritation. Neither should they be applied during the presence of great debility; and the earlier they are made use of in phthisis the better. Where there are large abscesses, which suppurate freely and exhaust the strength, any additional drain should be cautiously resorted to.

The utility of setons is not less obvious than that of issues; but the former are much more painful, and are often objected to on account of the unsightly scars that sometimes follow them.

The eruption from tartar emetic applied to the skin, is sometimes a great resource in phthisis; but its operation

* Where the irritation from an issue is excessive, it may be mostly allayed by an application composed of lime water and lard, rubbed together to the consistence of an ointment. A cold starch poultice has a similar effect.

is occasionally so violent as to require uniform caution in its use.

The time to interpose this class of remedies with effect, is in the onset of consumption, when a dry cough, burning of the hands and feet, pain and dyspnoea, warn the patient of impending danger; and there is this additional advantage to be derived from issues, that they do not interfere with the employment of active exercise, or long journeys. I have had patients who have kept their issues open while travelling hundreds of miles over rough roads, without experiencing from them any appreciable inconvenience.

These drains should not be suddenly discontinued: it is a safer practice to renew them at prolonged intervals, and thus gradually remove the system from their influence.

BATHING.

Cold bathing, in any stage of phthisis, is decidedly hurtful; and sea bathing, even within the tropics, has been interdicted by the united judgment of most practitioners. The ordinary midsummer temperature of fresh water in this climate, affords a most salutary bath, and need not be superseded by any artificial contrivances. But where these are necessary, I can strongly commend the plan advised by the late Dr. Armstrong of London, which consists in the use of a shower bath, at first at a temperature of 90°, and gradually reduced to 70°, and even to 60°, according to circumstances. The simple bath may be managed by the same rule. The patient should not remain in

longer than ten or fifteen minutes at a time, nor resort to it more than twice in the day; the best period being soon after rising in the morning. As the hair, if wet, remains long in that state, a cap of oiled silk should be worn to protect it from the water: and when the patient leaves the bath, his limbs should be subjected to friction by means of coarse cloths or the flesh-brush. He should also take some warm drink, varied according to his situation, from a cup of hot tea to an egg mulled in wine. It will sometimes be an advantage to dissolve a little salt in the water; and this is especially desirable where bathing is confined to a pediluvium, to which I am very partial: it prevents or removes coldness of the feet and oedema, and has a tonic effect on the whole system.

DIET.

It is not easy to prescribe a diet that shall meet all the emergencies of a consumptive habit; for, as every practitioner knows, what agrees with one may entirely disagree with another.

“Try all the bounties of this fertile globe,
There is not such a salutary food
As suits with every stomach.”

Thus, I have had patients who confined themselves of choice to a milk diet*, the use of vegetables, and a raw egg every morning; some could take little else than gum arabic water; while to others, meat was obviously indispensable. Rice is well adapted to this disease; and the

* The Romans believed milk to be curative in consumption, and preferred that of Stabiae.

same may be said of all the ordinary farinaceous foods. These are particularly desirable when there is active hectic, or local inflammation; or where the patient keeps his bed, or leads a sedentary life.

But the stomach soon wearies of such aliments, and requires a change. The lighter animal foods, poultry and shell fish, may be resorted to according to the state of the patient; who, if he is capable of using exercise, and especially if he should undertake a journey, will be the best judge of what suits his stomach. If, under these circumstances, a generous diet does not impair his digestion, or aggravate his symptoms, it is unobjectionable.

Lord Bacon, whose profound genius looked into all the arcana of nature, proposed for consumptives a *diet that should be half chyle before it reached the stomach.**

Yet no idea is more fallacious, or productive of more mischief, than the popular belief, that the strength of an invalid is supported in proportion to the quantity of nutritive aliment he may be able to receive into his stomach. Thus, patients are often plied with food when the appetite loathes it; and if by chance it is retained when swallowed, it acts as an irritant to the whole system, leaving it overcharged and enfeebled.

Extremes of diet are the fountains of disease; and he who, by an opposite plan, attempts to eradicate tubercles by confining his patient to a course of biscuit and water, and the use of vegetables, will often have the mortifica-

* *Opera.* Tom. 3, p. 78. The maxim of Celsus differs but little from that of Lord Bacon. “ *Cibi vero esse debent ex iis, qui facile conquoquuntur, qui maxime alunt.*”

tion to see the powers of life sink rapidly under so meagre a regimen.

There is one rule, however, of almost universal application in consumption, viz. that when a large abscess has formed, and acts as a drain upon the fountains of life, a low diet is decidedly hurtful. A similar lesion in any other part of the body would be met by the use of nutritious aliment; and why should the lungs form an exception?

CLOTHING.

Human caprice and extravagance are in nothing more remarkably shown than in dress: experience, disease, even death itself, convey unheeded monitions to those who yield an idolatrous homage to fashion. I am aware that on this subject it is almost in vain to expostulate; but if people have no regard for themselves, they ought at least to indulge some for their offspring, and I submit the following brief remarks.

Whenever the surface of the body is kept so cold as to produce uneasiness and distress, the circulation of the blood there is diminished, and the internal and more delicate organs are proportionably overloaded and oppressed. This inequality, in a vital process, cannot be long kept up with impunity: according as it is sudden, or repeated, or protracted, it is capable of inducing the most afflictive diseases to which the human frame is liable—rheumatism, catarrh, inflammatory affections of the viscera, scrofula in scrofulous constitutions, consumption in those predisposed to it, &c. In fact, it may be safely asserted, that the integrity of no one of the organic functions is more

essential to health than that of the skin: an equal temperature of the body equalises the circulation; for the mercury in the thermometer is not more sensitive to the changes in the air, than is the blood in the vessels of many delicate persons: and I am convinced, after much observation, that a large number of the consumptions that occur between the ages of eighteen and thirty years, might have been prevented by a proper attention to dress in childhood. No infatuation is more preposterous than that which is familiarly called the *hardening* of children, by exposing them, half-clothed, to every vicissitude of temperature, and by subjecting them to injudicious cold bathing. These practices are peculiarly objectionable in a climate so inconstant as ours; and I have no hesitation in saying, that where one constitution is invigorated by them, twenty are absolutely destroyed.

Many mothers of the present day act, in this particular, on the Spartan principle: for Plutarch, in his life of Lycurgus, says that the women of Sparta did not wash their new born infants with water, but with wine or spirits, in order to try their constitutions; supposing that the sickly would die under the experiment, and the healthy become still more hardy and vigorous.

What is true of prevention in childhood, is of equal application in the therapeutic treatment of adults. In vain is the use of medicine, or the regulation of diet; in vain are all the other precautions that ingenuity can devise, if the skin is not kept warm, and its healthy secretion maintained, by proper attention to the quantity and quality of clothing. As winter approaches, the chest of the invalid

should be coated in flannel up to the neck, and the same dress should be extended down the arms to the wrists: and where this material is insufficient to prevent the sensible access of cold, a buckskin vest ought to be worn over it. The body and lower limbs are to be protected in like manner, and particular attention given to the feet; for if the latter are habitually cold, the whole system will participate in the inconvenience.

It is well known to those who have given attention to this subject, that even Russia, with its intense cold, is a far less consumptive climate than England; and the difference is solely attributable to the Russian custom of keeping their houses warm, clothing themselves in furs, and taking particular care to preserve their feet from cold and damp.*

In Holland, which is in the same latitude with England, consumption is comparatively rare among the native population, and for the very reasons which prove an exemption in Russia.

I could mention several examples, both in children and adults, in whom the constitution has been suddenly and effectually restored, from a languid and almost hectic condition to comparatively robust health, by a timely change of dress in the manner above mentioned; and I must, once for all, repeat, that without this precaution, all other measures, whether prophylactic or remedial, will end in disappointment.

* DR. REID, *On Consumption*, p. 201. The lower classes of people in St. Petersburg suffer much more from phthisis than the wealthy, owing to the absence of household comforts.

TREATMENT.—EXERCISE.

It is obvious from what has been said in the preceding section, that clothing modifies the climate in which we live in a most important manner: thus we may feel the vicissitudes of temperature, or not, according as we expose or protect the surface of the body: for under the latter circumstances there are but few days in the year in which the lungs, even in this climate, cannot bear the cold of winter without inconvenience. I therefore entirely coincide in the views of my friend and preceptor Dr. Parrish,* that "vigorous exercise, and free exposure to the air, are by far the most efficient remedies in pulmonary consumption. It is not, however, that kind of exercise usually prescribed for invalids—an occasional walk or ride in pleasant weather, with strict confinement in the intervals—from which much good is to be expected. Daily and long-continued riding on horseback,† or in carriages over rough roads, is, perhaps the best mode of exercise; but when this cannot be commanded, unremitting exertion, of almost any kind, in the open air, amounting even to labour, will be found highly beneficial. Nor should the weather be scrupulously studied. Though I would not advise a consumptive patient to expose himself recklessly to the severest inclemencies of the

* North American Medical and Surgical Journal for 1829, 1830.

† Dr. Sydenham asserted, that riding on horseback was as certain a cure in consumption as bark in an intermittent. "Stoll did not find it so in the middle of the last century; for he tells us that if a consumptive patient mount his horse, he will ride to the banks of the Styx as surely as if he were in a pleurisy." This only proves, what every one knows, that no one remedy is suited to every constitution.

weather, I would nevertheless warn him against allowing the dread of taking cold to confine him on every occasion when the temperature may be low, or the skies overcast."

There is great practical wisdom in the preceding directions; nor need they, in my view, any other qualification than a proper distinction between fatigue and exhaustion: it is only where the latter may repeatedly happen, or where an active fever may be present, or inflammation, or abscess, that injury is liable to follow:—exceptions of which more will be said hereafter.

The once universal plan of confining the patient to his room, regulating the temperature by the thermometer, with bleeding, low diet, and perhaps mercurials as adjuvant remedies, has now become so far superseded by the more rational practice just mentioned, as scarcely to claim a refutation. I have seen it fairly tried, both in this country and in Europe, but never with success. It has not even the merit of keeping the disease at bay; for they who are so carefully guarded from all physical agents, feel the effects of them a hundred fold on a slight exposure. How can the patient recover or support his strength, when every avenue to it is closed?

On the contrary, every person of common observation must have noticed consumptive patients, who, by persevering in the active duties of life, have protracted their existence for years, and enjoyed a considerable degree of health and recreation.

I well recollect the instance of one of my patients, who, during a protracted hectic, over which tonics had no

controul, was supported to her carriage in a state of extreme debility, and after a drive of twenty minutes returned home seemingly more enfeebled than before. But, in a very few hours, the advantages became manifest; the plan was persisted in from day to day, and speedily resulted in a more than ordinary degree of health. This lady is now in Europe, and is, as I am informed, free from any symptoms of pulmonary disease.

Had this patient been permitted to remain in her chamber at the crisis above mentioned; had low diet and depletion been used to reduce the fever, I am entirely certain that her case would have long ago been hopeless.

To this extreme case (for such it really was) I might readily add others which, if not equally striking, are scarcely less corroborative of the practice I have adopted.

The late Dr. Valentine Seaman, of New York, was so far gone in consumption in the year 1803, that his case was then considered desperate; and yet he subsequently practised his laborious profession for twenty years, in defiance of perpetual bad health, and accumulated infirmities. He justly attributed this prolongation of life to the constant exercise to which his avocations subjected him; well knowing that if he once abandoned his active habits his constitution would yield to his disease, to which he at length fell a victim.

Dr. Pitcher has communicated to me the highly interesting fact, that the consumptive Indians of the Osage tribe, have their symptoms suspended during their semi-

annual excursions in pursuit of the Buffalo, but that they soon relapse on becoming again inactive in their towns.*

A knowledge of similar facts led Salvadori, in 1787, to publish "a plan for the treatment of consumption, which he proposed to have combined from the works of Hippocrates, Bennett and Sydenham. Discarding medicine, and all exactness of regimen, Salvadori directs his patient in the morning to climb as quickly as he can, up some eminence, till he is out of breath, and bathed in sweat, and then to place himself near a large fire to increase the perspiration. He is afterwards to change his linen, and gradually withdrawing from the fire, to partake freely of salted meat and wine."†

It cannot be denied, however, that even exercise may be abused. I have seen the constitutions of young children injured by a too violent participation in gymnastic exercises, and in adults it is often productive of lasting ill effects. A gentleman, not long since in my charge, ruptured a blood-vessel in the act of boxing, which has been followed by tubercular disease of both lungs; and three others of my patients have suffered from haemoptysis in consequence of incautious violence in riding. Yet the following facts from the work of Dr. Chisholm, may be quoted in triumph by the disciples of Salvadori.

"An officer of rank in the East India company's service, several years ago related to me a very remarkable instance of hardship and cruel treatment, proving in the highest degree curative in a constitution broken down by

* See Dr. Pitcher's letter, Appendix, No 2.

† Young, On Consumption, p. 327.

this disease (consumption.) It occurred under his own eye. After the capture of the remains of the gallant detachment under the command of Col. Baillie, by Hyder Ally, the utmost exertions were made to convey the prisoners, among whom was my informant, beyond the reach of rescue. A sergeant, one of these unfortunate men, then laboured under the worst symptoms of phthisis; and, at this time suffered greatly from colliquative diarrhoea. The merciless enemy, regardless of his wretched situation, forced him, at the point of the bayonet, to keep up in the hurried march, for no kind of carriage was allowed. His captain, my informant, witnessed the poor man's misery, but being himself chained, he could render him no assistance, nor dare to intercede for him. After the first two or three days, the sergeant became more able to march, and before his arrival at the place of destination, all the symptoms of his disease vanished. A scanty allowance of rice was his only food.”*

Dr. Rush informs us that he saw three persons, who were cured of consumption by the hardships of military life during the revolutionary war of America. He adds the instance of the son of a New Jersey farmer, who was sent to sea for a consumption. “ Soon after he left the American shore, he was taken by a British cruiser and compelled to share in all the duties and hardships of a common sailor. After serving in this capacity for twenty-two months, he made his escape, and landed at Boston, from whence he travelled on foot to his father’s house (nearly four-hundred miles) where he arrived in perfect health.”

* CHISHOLM, On the Climate and Diseases of Tropical countries, p. 112.

I therefore think we may adopt as an aphorism in therapeutics, the language of Dr. Rush—that “The remedies for consumption, must be sought for in those exercises and employments which give the greatest vigour to the constitution.”*

When persons from the badness of the weather, or the debility of disease, are precluded exercise in the open air, the flesh brush affords a most beneficial alternative. It should be used twice or thrice during the day, (at least fifteen minutes each time,) and its application directed especially to the legs and arms. In the advanced stage of phthisis, when restlessness prevents sleep, the flesh brush will often be found to act more promptly and more happily than any anodyne.

* Med. Inq. and Obs. vol. i. p. 204. See also Cases of Pulmonary Consumption, &c., by Thomas Henderson M. D., of Washington city: published in the American Journal of Medical Sciences, vol. viii.

CHAPTER XIII.

ON CLIMATE.

SECTION I.

CLIMATE OF THE UNITED STATES.

UNFORTUNATELY no climate is more variable than that of the United States; and it is remarked by Volney, that its nearest analogue is to be found in northern China, and the adjacent parts of Tartary.

To select salubrious spots in so inconstant an atmosphere, is to choose among difficulties; at the same time that some preferences may be pointed out.*

Experience has amply proved, that a mixture of sea and land air, such as exists on all our maritime situations, is unfavourable to delicate lungs; and especially where there is phthisis, or even a predisposition to it. This rule appears to be of nearly equal application in all coun-

* It has been suggested to me by Dr. Bird, the ingenious author of *The Gladiator*, that the only equable climate in the United States, is that of the *mammoth cave*, in Kentucky. The temperature of these subterranean solitudes differs very little, the year round, from 56°, and its atmosphere is perfectly dry. May not this extraordinary cavern (which has been explored for many miles without its limits having been discovered) hereafter become a place of hibernation for invalids, where they will be shielded alike from the cold, the wet and the noise of the world above them!

tries; and the fact is probably, in a great measure, owing to the sudden and extreme changes in the atmosphere in such situations: for it has been observed, that several sea-bathing places in the south of England, which are protected from the north and east winds, are congenial to pulmonary invalids; while other places but a short distance off, and which are exposed to the winds in question, exert a decidedly noxious influence. The latter remark applies to nearly all the localities on our coast with which I am acquainted; indeed, north of Florida, I am not aware of a solitary exception. Even those consumptives who visit the bathing places of New Jersey in the summer season, are obviously injured by it.

Doctor Rush relates the following circumstances in illustration of the preceding facts. "In Salem, in the state of Massachusetts, which is near the sea, and exposed, during many months of the year, to a moist east wind, there died in the year 1799, one hundred and sixty persons, of whom fifty-three were consumptive." "Consumptions," adds Dr. Rush,* "are more frequent in Boston, Rhode Island and New York, from their damp winds and vicinity to the sea-shore, than they are in Philadelphia. This statement is fully corroborated by a reference to the bills of mortality for those places in latter years.†

With respect to the deleterious quality of the mixed air of our coast, Dr. Rush gives the following additional example. In the neighbourhood of Cape May, which lies near the sea shore of New Jersey, there are three

* Med. Inq. and Obs. vol. ii. p. 114.

† See Appendix. No. 1.

religious societies among whom the influenza prevailed in 1790. Its mortality, under equal circumstances, was in the exact ratio of their vicinity to the sea. The deaths were most numerous in that society which was nearest to it, and least so in that which was most remote from it.”*

I have known patients from this place, to be seriously inconvenienced by a few days' stay in New York, during a northern tour: and one of my medical friends informs me, that having taken up his residence in that city twenty years ago, he found his lungs so affected by the climate, as to be obliged to return to Philadelphia at the expiration of six months. He has now past the meridian of life, and enjoys good health.

It has been supposed, however, that there are certain situations on our coast which form an exception to the above rule, and among them may be mentioned St. Augustine, in East Florida. This place is situated near the coast, in latitude $29^{\circ} 45'$, on a small bay about two miles from the ocean. The town, which contains about 1800 inhabitants, stretches along the bay for nearly a mile. The soil is light sand in the immediate vicinity of St Augustine, but a little further into the country it becomes mixed with clay and marl, and is covered with pine forests.

Although the climate of St. Augustine is probably the most equable in the United States, it is subject to great vicissitudes: while the inadequate provision which the in-

* Loco citat.

habitants make for cold weather, renders a *severe* winter in this latitude a very exposing one to invalids.

The season, however, is occasionally mild and equable throughout, and under such circumstances has afforded a decidedly beneficial retreat. It would seem, however, that such seasons are greatly in the minority; that of 1834-35 has proved severe almost beyond example; and perhaps every invalid who was in St. Augustine at the time, imbibed a decidedly unfavourable impression of the climate.

The late Dr. C. of this city, was induced by his friends to pass the winter of 1829-30 in St. Augustine. He had, when he left here, purulent expectoration, hæmoptysis and hectic fever. The winter proved of the most favourable character, and he returned home in the spring surprisingly improved in his general health. This fact induced not only himself, but many other invalids similarly affected, to pass the following winter (1830-31) at the same place. But, in lieu of the mild climate of the previous year, there was an almost constant prevalence of a damp, chilly, northeast wind, so deleterious in its effects as to destroy many of the invalids collected there, and irreparably to shatter the feeble frames of others. Among the latter was my friend, who survived his return but a few months.*

From a letter of Dr. Porcher, contained in Dr. Dunglison's admirable work, the "Elements of Hygiène,"† I have gleaned the following facts:

* I believe with Dr. Perrine, that Cape Florida possesses great advantages over St. Augustine as a winter retreat, and will at some future day become a favourite resort with pulmonary invalids.

† Page 189. To this work I must also refer for tables of temperature much

The thermometer in a solitary instance fell 37° in twenty-four hours. "Changes of 20° or 25° occur frequently every winter; in some instances even in a few hours." These changes, however, are usually between 65° and 45° or 40° .

The thermometer does not fall to 35° more than five or six times in a winter, nor does it remain so low more than a few hours.

The lowest degree to which mercury is known to have fallen, is 20° : nor has it been observed to remain for twenty-four hours as low as 32° .

Cold weather seldom lasts beyond two or three days, and is generally followed by a "long succession of days with an atmosphere the most bland and delightful."

"Of the number that annually visit us, there is a fair proportion of cases that experience relief, and many of permanent restoration to health."

With respect to Passa Christiana, on the Gulf of Mexico, which has been much resorted to in pulmonary affections, Dr. Hunt informs us that it is "liable to no variety of temperature—its atmosphere is warmed by the Gulf Stream, and is exempt by distance, and the intervening forest, from the cold air of the mountains."* Yet he adds, that even with these seeming advantages, those invalids who resort to it derive but little benefit. We

more extended than those here given, and also for a great body of highly instructive facts and remarks in reference to the climate of this country. Dr. Porcher's statements are drawn up with great candour and good sense, and are worthy of the perusal of every person interested in this question.

* Observations on a Change of Climate in Pulmonary Consumption. By HENRY HUNT, M.D., of Washington city. Published in the *North American Medical and Surgical Journal*, vol. i. p. 282.

may hope there is some fallacy in this opinion, inasmuch as it seems incompatible with analogy and experience.

It seems necessary, therefore, to inquire what *inland* situations our country possesses, to which invalids may resort with a prospect of being benefitted by the change.

Experience has amply proved that a dry air, in conjunction with the aroma of pine forests, is most congenial to delicate lungs. The ancients sent their consumptives to the pine forests of Egypt,* which are described by Hippocrates as being dry and arid, yet refreshing to invalids.

I have myself repeatedly seen stubborn and almost inveterate catarrhs, which had resisted every mode of treatment, cured in a very few days by exchanging the city air for that of the pine region of New Jersey. It is not easy to give a satisfactory explanation of this fact; but it is too familiar to be doubted: and I think I have known coughs that would have eventually induced consumption, radically cured by the change just mentioned. Thus also have I seen confirmed phthisis kept at bay, and its most distressing symptoms greatly mitigated.

There is one place in particular, Pine Cottage, about seven miles east of Mount Holly, that has long been celebrated for its salubrity. It is situated on the margin of

* "Sylvas, eas duntaxat quæ picis resinæque gratia redantur, utilissimas esse phthisicis, aut qui longa ægritudine non recolligant vires, satis constat: et illum coeli æra plus ita quam navigationem Ægyptiam proficere, plus quam lactis herbidos per montium æstiva potus."—C. PLINII, *Hist. Nat. lib. xxiv. cap. 6.*

"I do not know to what cause it is to be attributed, but I certainly slept more soundly on the banks of the Nile, or on the sands of the desert, than I ever did in any other place." BELZONI, *Researches in Egypt*, p. 393.

pine forests, which nearly environ it; and the land is sandy and dry in the extreme. This spot, although uninviting in appearance, has a well known restorative effect on invalids, and especially in pulmonary affections. I can truly say, that among the many patients whom I have sent there, the greater number has been singularly benefitted.

But when it becomes advisable to combine a long journey with a change of air, the invalid cannot do better than direct his course from our Atlantic cities to the western states, cross the Alleghanies, and travel through Ohio and Kentucky. If the autumn can be chosen, the excursion might be prolonged through Tennessee into Alabama, which, in general, possesses a comparatively mild, though not always an equable winter climate. An anonymous writer makes the following observations respecting these portions of our continent. "In the United States there is an extensive region, in a suitable latitude, much more free from the influence of mountains and large bodies of water, than any we know in Europe. We allude to the western and northern parts of Georgia, the interior of Alabama, some portions of the state of Mississippi, and some of the western and northern parts of Louisiana, and Arkansas. The atmospheres of these places are sufficiently dry, the winters usually mild and pleasant and the vicissitudes in the weather comparatively inconsiderable. We do not hesitate to predict, that when the resources of our country shall have been fairly unfolded, the region just indicated will be found to be among the best winter retreats on earth, for the consumptive and infirm. In all the places just named, there are large tracts of fine land,

uncommonly healthy. We do not however attribute their healthfulness to any odorous emanations from the forest timber. The soil is sandy, a circumstance which contributes to the dryness of the air, because the sand imbibes the moisture from it and retains it. Pine land, moreover, not being very fertile, does not produce heavy crops of succulent vegetables, to die, dissolve, and generate malaria. Hence the real causes of disease are few.*"

Yet it is not to be supposed that Alabama is exempt from atmospheric vicissitudes; on the contrary a gentleman who passed the winter 1833-34 in that country informs me, that the thermometer would occasionally vary 25° in the twenty-four hours, and that the winds were not unfrequently bleak and piercing. Whatever situation the invalid may have chosen for a winter's residence, he should return northward on the approach of warm weather, and in so doing will do well to visit the Red Sulphur Springs in Virginia; a region of diversified natural features, and of very equable temperature in the month of July. Several of my patients who have visited this place, speak of it in terms of the highest commendation as affording a delightful mid-summer residence. How far bathing in these thermal waters may be of advantage in pulmonary affections, I have not been able to decide from personal observation; but Dr. Hunt has adduced some cases in which the results were remarkably salutary.

Northern tours, avoiding the sea-coast, annually prove advantageous to great numbers of invalids: even the

* Transylvania Jour. of Med. June, 1834.

rough and mountainous roads of the interior of Pennsylvania, conduce to the same end, although, *a priori*, such a result would be deemed scarcely possible.

Whatever situations may be chosen, those will be found most congenial which possess the nearest approach to an equable temperature. All sudden changes are deleterious, especially from higher to lower temperatures.

I shall take leave of this part of my subject by stating a fact in illustration: on the night of the 27th of February, 1833, the wind suddenly changed from northwest to northeast, blowing hard and extremely cold. Before morning, and in the short space of four hours the thermometer fell about forty degrees (from fifty-five to fifteen degrees Fahrenheit.) Notwithstanding the precautions taken to prevent the access of cold to their sick rooms, almost all my consumptive patients were much worse on the following day, especially in respect to cough, hectic and debility. In the Alms-house hospital, where I then had fifteen cases of phthisis, all of them suffered an obvious aggravation of symptoms, and seven died in the interval between the change of weather and the 7th of March, being eight days.

SECTION II.

ON THE CLIMATE OF THE WEST INDIA ISLANDS.

In the winter of 1834, (January to April inclusive,) I visited eight of the Windward or Charib Islands, viz: Barbadoes, St. Lucia, Martinique, Dominica, Antigua, St. Kitts, St. Thomas and Santa Cruz. With respect to some other Islands of this group, Trinidad, St. Vincent

and Grenada, I procured satisfactory information from intelligent physicians, and other residents; and I now publish, with confidence, the following result of personal observation and assiduous inquiry.

The mean annual temperature of these islands is ascertained to be about 80° , the extreme annual range 20° ; although during my stay in the tropics, the thermometer did not vary nine degrees: and the mean daily range is about 6° .

Although the temperature varies so little at the level of the sea, the islands differ materially in respect to other atmospheric changes. Those that are mountainous are subject to frequent showers, and more varying winds; for they have the *land breeze* in the evening, which commences about sun-down and continues to blow until about eight o'clock next morning, when it dies away. This wind, which is variously explained, blows from the centre of the islands towards the shores, and is delightfully constant and refreshing.

The *sea breeze*, on the contrary, is but another name for the *trade wind*, which blows nearly the whole year from east to west, and, in the low islands, supersedes the land breeze at night, so that with slight remissions of strength, it is felt throughout the twenty-four hours. But in the Islands which have the land breeze, the sea breeze does not set in until about ten in the morning, and subsides towards six p. m. There is less of the sea breeze during the months of August, September, and October, than in any other part of the year; but the winds are more prone to be tempestuous; whence the period in

question is called the “*hurricane season*,” and is proverbial for its dangers on the sea, and its insalubrity on land: the rains are frequent and excessive, promoting vegetation, but diffusing the seeds of disease. The rainy season, however, terminates only with the year. “The waters with which these congregated vapours load the air,” says Mr. Edwards, “seldom fall with great and general force, until the beginning of October. It is then that the heavens pour down cataracts. An European who has not visited these climates, can form no just conception of the quantity of water which deluges the earth at this season.”*

The eight months from May to November, are to be sedulously avoided by those who visit the West Indies for their health. Fevers, dysenteries and rheumatism, are among the prevalent maladies at this period, and their effects on constitutions not inured to the climate, are singularly exhausting and rapidly fatal.

From December to April, inclusive, is the season in which the invalid should visit the tropics. Even then the sun is hot at mid-day, but the breeze is never-failing and the shade delightful: it is, in fact the perfection of temperature. These months are consequently most free from disease, and present one of the most agreeable climates in the world. Showers, it is true, are not unfrequent, but they are of short duration, and seldom so profuse as to render the air humid and sultry.

Every person, however, who visits the West India

* Hist. of the West Indies, vol. i. p. 9.

Islands, must expect to feel, in some degree, the enervating influence of so warm a climate. Languor of body and listlessness of mind are inevitable consequences, and indispose alike to physical or mental exertion.

In the following brief remarks on the climate of particular Islands, I may be allowed to add such collateral circumstances as appear to me to interest the comfort of the sick.

Barbadoes.—The climate of this small island has been found very restorative to exotic constitutions: it is indeed truly delicious, seldom being oppressively warm in the shade during the winter months; and even when the sun is at the highest, there is an elasticity in the sea breeze that imparts life and health at every inspiration.

During a stay of five weeks in Barbadoes in the months of January and February, the thermometer in Bridgetown, which is on the sea side, varied but eight degrees: at sunrise it uniformly stood at about 78° of Fahrenheit: by ten o'clock, it rose to 84° (occasionally to 85°) which it maintained until evening, when it fell to 80°. There was no rain of an hour's duration, and no period when the air became sultry.

Owing to the general flatness of the island (it being only partially mountainous in the centre, and in its northern margin,) there is no land breeze; but the trade wind is never absent at the season of which I am speaking.

Notwithstanding this uniform mildness of the climate, Barbadoes is by no means free from consumption: on the contrary, the disease is, I am told, of rather frequent occurrence and when it does appear makes rapid

progress. Dr. Cutting, the most experienced physician of Bridgetown, informed me that he had repeatedly examined the bodies of persons who had died of consumption, and in every case found them disorganised by tubercles, and in some instances to an extreme degree.

Rheumatism and scrofula, especially of the small joints, are common diseases; and elephantiasis is frequently seen in the black population. Yet notwithstanding these circumstances, the climate is admirably calculated for the restoration of invalids from northern latitudes, and has a very happy effect on phthisis. Independent of the equable atmosphere, the roads are good to almost every part of the island, and there is much to interest the mind.

It may be added, that the climate of Trinidad, St. Vincent, and Grenada, does not materially differ from that of Barbadoes; but the two last named islands are mountainous, and therefore somewhat more variable in temperature.

St. Lucia and Dominica are extremely unhealthy, variable in temperature, and wanting in every kind of accommodation for the sick.

Martinique.—This is a mountainous island. St. Pierre, its capital, is remarkable for its surprising cleanliness and romantic situation. Excepting on the side of the ocean, it is overshadowed by lofty hills covered with dense foliage, save where the naked cliffs admit of no vegetation. Yet these circumstances, so gratifying to the eye, are unfavourable to delicate constitutions; for the mountains collect moisture, rain is of almost daily occurrence, and the winds variable and often sultry. The walks in the environs are delightful, especially the Garden of Plants. a

lovely spot, shaded by cocoanut, palm, and cabbage trees, and watered by fish-ponds and fountains. If any part of the West Indies is calculated to relieve the heart of its cares, or disease of its pangs, it is the evergreen groves in the environs of St. Pierre.

The Islands of *St Kitts* and *Anitigua*, offer few temptations to strangers; the latter possesses the physical appearances of Barbadoes, but it is impoverished and decayed, and has no suitable accommodations for the sick, even in the town of St. Johns.

Tortola is infested by tropical fevers the year round. *St. Thomas*, although the mart of all nations, and the seat of much wealth and luxury, has few inducements for invalids, either as respects its climate or its household comforts. When the sea breeze blows directly into the harbour, the air is most refreshing: but if the wind comes, as frequently happens, from any other point of the compass, it is cut off from the town by the mountains that surround the bay, and the air becomes to the last degree sultry and oppressive: I never experienced a more intolerable atmosphere, than in *St. Thomas* in the month of March: yet I there met with a gentleman* far gone in pulmonary disease, but whose consumption was complicated with asthma, who assured me that he preferred this humid climate to the dry atmosphere of *Santa Cruz*. This however is a rare exception; for, although it is often convenient to land at *St. Thomas* on the way to other islands, invalids are generally compelled to expedite their departure.

* Dr. A. PERKINS, since dead.

Nevis.—This is a charming spot, with an enviable climate and good roads. Near the town of Charleston is a boarding house with three fine baths, varying in their temperature from 50°, 100°. This island is a sort of fashionable watering place for the inhabitants of the other Windward Islands, and the accommodations are accordingly good.

Guadaloupe.—“Basseterre, in Guadaloupe, is a pleasant residence for convalescence: its walk (*le cours*) is formed of huge and lofty tamarind trees on each side of a smooth gravel walk, skirted with seats, near which is a brook of water, and two fountains. Provisions are abundant, and the vegetables the very best in the Antilles, and the expense of living is moderate.”

These facts relating to Guadaloupe, were furnished me by the kindness of Dr. James Mease, from the MS of an intelligent invalid who had visited most of the Charib Islands. The same writer commends the upper town of St. Eustatia, and Saba, an isolated colony about seven leagues North West of St Eustatia.

Santa Cruz.—Well has Santa Cruz been called the “garden of the West Indies,” for no one of the Islands surpasses it in the luxuriant growth of vegetable nature, or delightful equability of climate. Situated several hundred miles north of Barbadoes, and within forty miles of St. Thomas, it is more accessible from the United States than most of the other islands. The approach to it is charming; the shore is gently undulated, and beyond rises into hills without being mountainous; the town of Frederickstæd, though small, is extremely neat, and

lies on the margin of the sea, shaded by cocoanut and tamarind trees.

Frederickstæd possesses two boarding houses arranged expressly for invalids, and provided with all the comforts of the tropics. No accommodations which I saw in the West Indies can compare with these; which circumstance, joined to the beauty of the island, the deliciousness of its climate, the perfection of its roads, (which are not surpassed by any in the world,) the hospitality of the inhabitants, and the abundance of fruits, gives this island, as a resort for invalids, a preference, perhaps, over all others.

In its physical geography it resembles Barbadoes; but its climate is even more equable: it has a perpetual sea breeze in the winter months, and its various parts are so accessible, as to open to the stranger many avenues to health and recreation.

The following observations show the temperature of the air of Santa Cruz, during five months of 1833-34, viz: from November to March inclusive. The Thermometer was placed in a dining room in Frederickstæd, where there was a free circulation of air, but no reflection of the sun. The temperature was noted* at four periods every day at 8 A. M., at noon, at 3 P. M., and at 8 P. M. In place, however, of inserting so extensive a series of observations, I have made the following abstract, which will answer all practical purposes.

* By DR. PERKINS and MR. BIRT, whom I met in the West Indies, and who at my request allowed me the use of their register. The observations for the close of March were made by myself.

1833. *November*.—During this month the thermometer ranged, at 8 A. M., from 77° to 84° ; being but twice so low as the former and once so high as the latter.

From 12 to 3, the range was from 78° to 85° ; being but once as low as the former.

At 8 P. M., the range was from 76° to 82° .

December.—At 8 A. M., from 75° to 80° ; being but once so low as the former, and but once so high as the latter: medium temperature 78° .

From 12 to 3, from 80° to 85° ; being but once so low as the former, and mostly at 83° .

8 P. M., from 76° to 80° ; mostly at 78° .

1834. *January*.—At 8 A. M., from 74° to 79° ; being but once so low as the former, and averaging 77° .

From 12 to 3, from 77° to 84° ; mostly at 82° .

At 8 P. M. from 76° to 79° .

February.—At 8 A. M. from 75° to 79° .

From 12 to 3, from 77° to 83° .

At 8 P. M., from 73° to 78° .

March.—At 8 A. M., 77° to 81° ; only once so high as the latter.

From 12 to 3, from 78° to 85° .

At 8 P. M., from 76° to 78° .

It therefore appears, that during the whole five months, the thermometer was never below 74° , nor above 85° , making an extreme range of *but eleven degrees!* Where equability of temperature is desired, what place on earth can surpass this? Dr. Stedman informed me, that in fifty years' observations, he but once knew the mercury to fall

to 67°, which was in the early part of February. The extreme heat of the weather in Santa Cruz, is in the month of August, when the thermometer sometimes rises to 93°. Yet even this island is occasionally subject to comparative vicissitudes of temperature: thus the very severe winter of the United States in 1834-5, seemed even to influence the atmosphere of the Tropics; for at Santa Cruz the thermometer fell from 83° to 72°, in a few hours in January; and Dr. Thornton, to whom I am indebted for this fact, adds, that the winter months were characterised by a succession of cold and wet weather, unprecedented in the recollection of the oldest inhabitants.

With respect to others of the West India Islands, I have gleaned the following particulars.

Jamaica.—A highly intelligent physician who resided several years in Jamaica, informs me that he never knew a case of consumption to originate in that island, not even among the blacks, although, among the latter class, scrofula is of common occurrence; that strangers affected with phthisis, who visit the island for their health, find the air of the lowlands much more congenial than that of the mountainous districts; and that a change from the former to the latter has generally proved injurious. The mean annual temperature in the lowlands is between 75° and 85°, of Farenheit; and in the mountainous districts, between 60° and 75°. Jamaica enjoys the sea breeze by day, and the land breeze by night.

Cuba.—As to natural advantages, this is the finest island in the West Indies; but a ruffianly population, and

a defective police, have in a great measure excluded its bounties from the sick. Travelling in the interior, excepting in caravans, is out of the question: and those who would enjoy its enviable climate, must be satisfied with a residence near some one of the larger towns—Havanna, St. Jago or Matanzas. “At Havanna, the mean temperature is 78°, and the difference between temperature of the warmest and coldest month, 23°. 76—twice as great as Madeira. The mean temperature of winter, is 71°. 24; of spring, 78°. 98; of summer, 83°. 30; and of autumn, 78°. 98;—estimates which exhibit that the situation, so far as regards elevation and comparative equability of temperature, must be favourable to those of weak lungs.”*

The temperature of Matanzas is about the same as that of Havanna, and its vicinity affords accommodations more adapted to invalids, than can be found elsewhere in Cuba.

Bermuda.—Although the Bermudas are not among the West India Islands, I shall take this occasion to offer a few remarks upon them. Being in latitude 32° north, and without the sphere of the trade winds, they are subject to sudden and considerable changes of weather; they are particularly exposed to the northeast wind, during the prevalence of which the air is both damp and chilly: this wind, moreover, occasionally prevails for several days together, as in the United States, and is accompanied by drenching rains. These facts were communicated to me

* DUNGLISON, *Loco citat.* p. 179.

by an intelligent gentleman who had resided six months in Bermuda, embracing an entire winter: he added that consumption was of frequent occurrence there, and that he had known entire families to migrate from Bermuda to the West Indies to escape this disease. I have not been able to obtain any exact thermometrical details; but in corroboration of the preceding statement I may add, that in my voyage to the West Indies, and when thirty miles north of Bermuda, the thermometer fell nearly 20° in a single hour; owing to the wind suddenly shifting from S. W. to N. E.

In a future part of this work* I have inserted some brief maxims for the regulations of persons who visit the West Indies in pursuit of health. In this place I shall offer two suggestions which bear equally upon the object in view.

I am quite certain that *change* of air is of great importance, even in situations where the climate may possess a remarkable equilibrium. On this point Dr. Clark makes the following observations. "Notwithstanding the uniformity of temperature which prevails in these (the West India) islands, the effect of a change from one to another is often very remarkably in improving the health. This has been observed frequently on a large scale among our troops in the West Indies; and, indeed, I believe one of the most powerful means of diminishing the sickness among our troops in that climate, would be to remove them frequently from one healthy island to another."† Where,

* Appendix No. 1.

† On the Influence of Climate &c. 2d edit.

a person is about to pass three or four months among the islands, it would be altogether desirable (all other circumstances agreeing,) to pass from island to island, remaining from two to four weeks at each. This plan (which I pursued with respect to the gentleman whom I attended to the tropics) will be found extremely agreeable, and combines a constant alternation of those two acknowledged desiderata, change of air and sea-voyaging.

Another point remains to be noticed, which is altogether essential, viz: on returning from the tropics, not to land on a northern coast.

Persons who have received all the benefit they could have hoped for from the genial climate of the islands, have in many instances relapsed at once into the worst symptoms of their malady by a neglect of this precaution. Nor can any thing be more unreasonable than to suppose, that a delicate constitution that has been for months in the tropics, can at once return with impunity to the bleak air of the north. Invalids should never land north of Mobile, Pensacola or Charleston, remain there until the middle of May, and then travel slowly towards the northern states, so as not to arrive within 40° of latitude until the first of June.* The plan which some pursue of landing in New Orleans, and proceeding up the Mississippi in steamboats, is a bad one, because it exposes the traveller to constant atmospheric vicissitudes.

* Dr. LIND, a physician of almost unrivalled experience on the subject of climate, advises invalids who go from the tropics to the colder parts of Europe, to pass a winter on their way at Lisbon, Naples, or the south of France. On the Diseases of Hot Climates p. 204.

SECTION III.

CLIMATE OF PERU AND CHILI.

Peru.—The temperature of Peru is moderate in comparison with that of countries in the same latitude. “ Screened from the north and east by lofty mountains, and exposed to a wide extent of sea on the west, this happily situated country does not experience the extremes of heat and cold.”*

Rain is so rare as to be a phenomenon—storms are unknown. The mean summer heat is 80°, that of winter 65°. To the senses, however, the temperature appears much lower, and hence woollen clothing is always agreeable.” “ Such is the impression of the air on the skin, that the sultriness and pungency of high temperature, so often felt in temperate climates, are never experienced in the warmest weather.”

Lima, in the valley of Rimac, is the chief resort of foreigners who visit Peru; and this portion of the Republic is by far the best known, in the respects now under consideration. Farenheit’s thermometer rarely falls below 51°, and the greatest summer heat is about 81°. The barometer averages, throughout the year twenty-seven inches, four lines”.—“ The atmosphere is seldom changed or renovated, because thunder, lightning and tempests are seldom known on the sea-board, yet their place is awfully filled by frequent and sometimes terrible earthquakes.”†

* Military and Naval Mag. of the United States, vol. i. No. 4.

† Three years in the Pacific: By an officer in the United States Navy. 1834. p. 205.

The same observant author informs me, that although it never absolutely rains in the valley of Rimac, the atmosphere is habitually pervaded with fogs, especially at day break; and this remark applies to the entire year excepting a few days in mid-summer: while, on the other hand, in the depth of winter there is a constant mist. The vicinity of Lima is remarkably exempt from consumption. My friend Dr. Burrough, who resided upwards of four years in that city, informs me that he did not meet with a single unequivocal case that originated there during that period, although scrofula was not unfrequent.

On this subject Dr. Unanue, long a distinguished practitioner in Lima, has recorded some interesting particulars.

Chili.—An intelligent writer* already quoted, who has furnished me with most of the facts in this section, has remarked that the seasons of Chili resemble those of the tropics in being divided into wet and dry, rather than into winter and summer; the difference in temperature not being sufficient to allow of the latter distinction.

During the months of March, April and May, the weather is dark, damp, and cloudy. The thermometer falls to 67° or 68° , where it continues until the rain begins to fall, or until the middle of June. The rains continue with various interruptions until September, during which period the average temperature is 62° ; although the sensation is that of a much greater degree of cold.

“The spring months from September to December are delightful: the skies are cloudless, the temperature agree-

* Military and Naval Mag. of the United States, vol. i. No. 4.

able except at mid-day and a cooling sea breeze, bringing the freshness of the ocean atmosphere, sets in regularly about 10 in the morning and continues until night."

The summer months, viz: from December to March, are clear dry and intensely hot, the average temperature is at Valparaiso, being 81° of Farenheit. "Dryness is the distinguishing feature of the climate even in the vicinity of the sea: the quantity of moisture in the atmosphere is incredibly small."

Pulmonary diseases are rare; and there is no country where an invalid with certain forms of consumption would find a safer retreat than in the valleys of Chili. This remark of the writer above quoted is corroborated by an English traveller,* who speaks of the climate of Mendoza, on the confines of the Cordilleras, as curative of pulmonary consumption.

"The sea coast is not so favourable: persons who have disposition to hemorrhage from the lungs, with a dry cough, find the dry and evaporating power of the air too irritating, and their complaint very much increased. We have known several instances where the disease ran its course with great rapidity, in persons coming from the humid and softer climates of Peru and Colombia." This observation corresponds with that of my friend Dr. Burrough, who has informed me, that he knew many foreigners to be much benefitted by a residence in Lima, but that in every instance where they had been

* Miers. Trav. in Chili, &c. vol. i, p. 153. The distance from Buenos Ayres to Mendoza, is little short of a thousand miles, and requires about two weeks travel.

tempted to pass into Chili, the effect on their constitutions was fatal.

SECTION IV.

ON THE CLIMATE OF EUROPE.

Pure air is as indispensable to healthy respiration, as good food is to perfect digestion; and both functions may be occasionally invigorated by a change of aliment. Hence it is that, from the earliest ages, physicians have recommended to consumptives a change of climate, by sea or by land, as best calculated to invigorate and restore a shattered constitution.

Much has been written respecting those trans-atlantic situations most desirable as a residence for invalids; and on the present occasion I shall notice them as briefly as possible.

The works of Dr. Johnson* and Dr. Clark,† which have been republished in this country, should be the companions of every person who goes to Europe in pursuit of health: and if, in these treatises, he does not find the south of Europe that unalloyed paradise which he may have been led to suppose, he will be the better prepared to encounter those reverses of climate which are unavoidable even there, and require all the precautions of a more northern region.

The Americans who go on this pilgrimage, mostly pass

* *Change of Air, or the Philosophy of Travelling, &c.* By JAMES JOHNSON, M. D.

† *The Influence of Climate in the Prevention and Cure of Chronic Diseases, &c.* By JAMES CLARK, M. D.

their summers between the British Islands and Switzerland, and their winters in Nice, Florence, Rome and Naples. The climate of Great Britain, and indeed of the whole north of Europe, is too much like our own to ensure any salutary advantages by the change. A Parisian winter, as I know from experience, has no advantage over our own. But the air of the south of France, and especially of Provence, is peculiarly dry, and, as a general rule, remarkably equable. Yet even in this delightful region, consumption is common among the native inhabitants; and Dr. Clark quotes from M. Fournier the striking fact, that of one-hundred and fifty-four deaths in the hospital of Montpellier in a given year, more than one-third died of phthisis!

Nice, however, is the chosen spot on which the sick fix their dearest hopes. The mean annual temperature of this place is fifty-nine degrees, and the mean winter temperature forty-eight degrees. But it is subject to cold easterly winds, and during their prevalence the air is damp and foggy. The transitions of temperature are also very sudden; and I am certain that one great reason why invalids have complained so much of the winter at Nice, is that they have gone there with their imaginations filled with a perpetual summer, and hence neglected the precaution of taking with them a sufficiency of warm woollen clothes.

“ From the northwest, or mistral, which is the scourge of Provence,” says Dr. Clark, “ Nice is pretty well sheltered. The force of this wind seems to be broken and directed to the southward, by the Estrelles, a chain of

mountains between Frejus and Cannes. But although the mistral is never experienced in its full power at Nice, or only towards its termination, when it takes a more westerly direction, the keen, dry quality of the air is very sensibly felt whilst it prevails. It sets in generally about two or three o'clock in the afternoon, and is not of long duration." "The sirocco rarely blows, and when it does it is gentle, and not unpleasant to the feelings of invalids in general. But the sharp, chilling easterly winds are the greatest enemy with which the invalid has to contend: and the prevalence of these during the months of March and April is admitted, I believe, by all who have felt them, to form a great objection to this climate, especially in pulmonary diseases."*

Although I spent a short period in the south of Europe yet not travelling as an invalid, I did not visit Nice. I shall therefore take the liberty of extracting an additional paragraph from the valuable work above quoted, and for the reason already mentioned—that this vicinity is a sort of land of promise to the consumptives of our country.

"In consumption, the disease with which the climate of Nice has been chiefly associated in the minds of medical men, little benefit, I fear, is to be expected. When this disease is complicated with an inflammatory, or highly irritable state of the mucous membranes of the larynx, trachea, bronchia, or of the stomach, Nice is decidedly an unfavourable climate; and without extreme care on the part of such patients, and a very strict regimen, the complaint

* DR. CLARK. Op. citat. 2d edit. p. 120.

will in all probability be aggravated by a residence here. Indeed, the cases of consumption which ought to be sent to Nice are of rare occurrence. If there are any such, it is when the disease exists in torpid habits, of little susceptibility, or not much disposed to irritation; and when it is free from the complications which have just been mentioned. Even the propriety of selecting Nice as a residence for persons merely threatened with consumption, will depend much upon the constitution of the individual. Dr. Skirving has met with cases which leave no doubt on his mind, that a residence for one or two winters often proves of advantage as a preventive measure, in young persons threatened with this disease; and even in some cases where there was reason to believe that tubercles already existed in the lungs, the climate has appeared to be useful. But in the advanced stage of consumption, his opinion, founded on eight years experience, accords with what has been already stated."

When I have ventured an opinion on this point, I have recommended Nice to be tried, and if not found salubrious, to exchange it for Florence or Pisa. I moreover warn the invalid not to expect a change of *climate* to do every thing for him: there must be a corresponding change of *habits*. He must not omit daily exercise in the open air, and a constant resort to such recreations as tend to cheer the mind and invigorate the body. Thus it is better to remove from one place to another, than to remain stationary when the spirits are despondent, or novelty has ceased to refresh the senses. The air of Sicily is a good subterfuge, and an excursion among the

Grecian islands might be a delightful episode in the wanderings of an invalid. Such was the voyage of Cicero, whose lungs, in younger life, were so delicate as to have excited the apprehensions of his friends.

But he who sojourns in the south of Europe during the winter, must make good his retreat in the spring, and seek a more northern clime. I have never been more oppressed by the heat than in Lombardy, in the month of May.* Geneva and its vicinity form, in summer, an almost unrivalled residence. Indeed, this city appears to suffer less from phthisis than almost any other in Europe: for it has been ascertained, by an average of three years, that of its population of twenty-four thousand, the annual number of deaths from consumption is forty-six, or one case in five hundred and twenty-one inhabitants: while in England the proportion has been estimated at one in two hundred and twenty four.†

It seems, however, that a strong effort has recently been made by the English physicians to enhance the salubrity of their native climate; and in the effort to do so, they have possibly been too much biassed to allow full credit to the advantages of more southern climes.‡

* To those persons, however, who desire to remain in Italy during the summer months, Lucca and Sienna are preferable to most other places; yet even here the air is often intolerably hot.

† CHISHOLM, *On Tropical Climates*. Appendix.

‡ Sir H. Davy, in his *Consolations of Travel*, has the following passage, which I think mingles both truth and philosophy:

“ In the mild climate of Nice, Naples or Sicily, where, even in winter, it is possible to enjoy the warmth of the sunshine in the open air beneath palm trees, or amidst the evergreen groves of orange trees, covered with odorous fruit and sweet-scented leaves, mere existence is a pleasure, and even the pains of disease are sometimes forgotten amidst the balmy influence of nature,

The reason why so few people are benefitted by the climate of Italy, is to be attributed less to the climate itself than to their own imprudence. Invalids must see every thing. They persist in ascending mountains—walking to the summit of St. Peter's—the tower of Pisa—or the Cathedral of Milan, travelling from place to place in all kinds of weather, and exposing themselves to the sun, as if the mere circumstance of their breathing the air of Italy, was a guaranty against fatigue, exposure and dissipation itself.

Any change, if made when the lungs are in a state of abscess, may be considered as a mere palliative; but a *timely change* of air is almost always beneficial. Experience has incontestibly proved that change, even when seemingly for the worse, is salutary; for M. Portal declares, that he has known consumptive persons who had contracted their disease in Provence and Languedoc, remove to Paris with advantage.

Dr. Mosely observed that consumptive persons who went to Montpellier for their health, were exceedingly benefitted at first, but their disease was disposed to remain stationary afterwards; under which circumstances his advice was judiciously given—to go at once to some other place in the same latitudes.

and a series of agreeable and uninterrupted sensations invite to repose and oblivion."

To which passage Dr. Johnson makes the following rejoinder:

"Yes! but when we come to be startled from this bed of roses by the sirocco or the tramontane, we find, to our cost, that, the longer the series of agreeable sensations, the more susceptible do we become to the deleterious influence of the enormous transition in the climate."—*Change of Air, &c.* p. 295.

If we were to make exceptions to every place where phthisis is a common disease, there would be scarcely a locality left in Europe in which the invalid could shelter himself. In reference to this subject let us next inquire respecting the island of Madeira and the Azores.

Madeira has long been an established resort for the consumptive; and those who go while any chance of improvement remains, are in a majority of instances benefitted by the climate. The winter temperature ranges pretty equally from fifty-seven to sixty-five degrees of Fahrenheit, seldom falling below the former number. Even in summer it seldom rises above eighty degrees, excepting during the prevalence of a sirocco. But, notwithstanding this uniformity of temperature, perhaps, no malady is more prevalent in Madeira than pulmonary consumption. Persons of all ages and of both sexes, says Dr. Gourlay,* fall victims to it; nay, whole families have at times been suddenly swept away by it. And yet, as before mentioned, this climate has always been considered congenial to consumptives from other shores, and probably would permanently restore the health of many in the incipient state even of tubercular disease, was not the removal protracted to its last and irremediable stage.†

* Observations on the Climate and Diseases of Madeira. London, 1811.

† My friend, the late Dr. Alfred Perkins, whom I met in St. Thomas in the last stage of consumption, furnished, at my request, the following memorandum respecting the climate of Madeira. However at variance with general opinion on this subject, I think proper to insert it entire as the painful experience of an invalid: merely adding, that Dr. Perkins was compelled, though reluctantly, to abandon the climate of Madeira before he had remained six weeks on the island.

“ Possibly much that I have to say, on the subject of Madeira, may be confuted by other observers at different seasons. I reached the island about the

The Azores also possess a remarkably equal temperature, and have been found of great benefit to visitors, although consumption is by no means unusual among the native inhabitants. The natural peculiarities of these islands afford ample recreation for body and mind, and may aid the climate in repairing a slender constitution.

In addition to the preceding details on the effects of various climates of the old world in phthisis, I have gleaned the following facts from various sources. Consumption is common in Iceland. In Denmark it is of comparatively rare occurrence. In the British Islands the

20th October, 1833. The change from sea confinement, after a stormy passage of forty-two days, rendered the first day (by itself nothing remarkable) delightful. I find in my journal, a record of a severe rain the ensuing day. That was the only *heavy rain* that I recollect of. We had an occasional sunshine, during my stay upon the island, of a few hours during the day; but far the greater portion of the time presented nothing but a heavy mist or fog, which seemed to roll down in dense masses from the heights back of the town. I recollect but two days of sunshine. As early as the 1st November, the mountainous parts of the island were covered with snow, which caused a chilliness or rawness in the air, which was exceedingly uncomfortable to the invalid. My thermometer, which is very correct, and which agreed very exactly with one of Mr. March (our consul,) was frequently down to 62°, at nine in the morning, and often not above 65° at meridian. In addition to this, I may remark that most, and I believe all the houses, are built of stone and plastered directly upon the walls, which renders them quite damp, and this dampness they cannot banish by means of heat, as there is not a fire-place in the town. Under the circumstances above alluded to, I found myself shivering from morning to night, and my only resource was to ensconce myself under my blankets in bed. These things may be rendered less objectionable when the *family accompanies the invalid*, as they, by studying his comfort, may render his situation more tolerable, especially by taking a house for the season, and conducting it upon English or American principles. But, with the *individual* who goes singly, seeking health, the case is widely different. Finally, I add, that in conversation with several intelligent residents, and particularly with a medical gentleman educated at Edinburgh, the following remark was often made.—‘Invalids visit us at a wrong season; they should summer here and spend the winter months in the West Indies, as our summer is delightful.’”

deaths by it are estimated at one fifth of the entire mortality; and from my personal observations during nearly four years residence in England, Scotland and Ireland, I cannot suppose the estimate overcharged. In Paris the deaths are one-fifth: and for all France and Germany, the proportion is about the same. Vienna, however, suffers much less than perhaps any city in Europe, the deaths by consumption not exceeding an eighth or a tenth of the gross amount. In Malta, Sicily, Egypt, Persia, and British India the disease is extremely unfrequent, and in some of these countries almost unknown. In the Islands of the Indian Ocean, Bourbon, Isle of France, the Philippines, Manilla, &c. I am assured by Dr. J. N. Casanova (who visited them personally) that phthisis is of very rare occurrence.

SECTION V.

SEA VOYAGING.

Nothing appears more salubrious to the lungs than the pure air of the sea. The Romans, among whom consumption was a frequent disease, sought relief in a voyage to Alexandria;* or, where this was denied by circumstances, passed a large portion of time in sailing on the Tiber.

What was familiar to antiquity, has been amply corroborated by the experience of modern times. Nothing

* “Opus est, si vires patientur, longa navigatione, cœli mutatione, sic ut densius quam id est, ex quo discedit æger, petatur: ideoque aptissime Alexandriam ex Italia itur.”—CELSUS. *De Med.* lib. iii, cap. 22.

seems, in fact, to exert a more decidedly favourable influence on the lungs than unmixed sea-air: the cough of consumption is surprisingly allayed by it; and although it might be supposed that the violent retching of sea-sickness would render the patient liable to haemoptysis, I have known of but very few instances of the kind. The result is more or less favourable in most of the cases that have come to my knowledge.

In the ship in which I sailed for Europe in 1820, was a lady in the last stage of consumption: she was conveyed on board in an exhausted condition, and her friends took, as they supposed, their final leave of her in this world. The voyage to Liverpool occupied something more than three weeks, during the whole of which time this lady suffered such violent sea-sickness, that some were apprehensive that she could not live to reach England. On the contrary, however, although in a most enfeebled condition on her arrival in that country, her health improved so rapidly that she was able at once to use exercise in the open air, and was so much benefitted, that her original plan of passing the winter in Italy was abandoned. She remained a summer in England, and then returned to New York, where she enjoyed a comparatively renovated constitution for four years: but at the end of that period her malady made a final and fatal attack.

This instance, which fell under my personal observation, and which presented as hopeless a train of symptoms as the mind can well imagine, made a strong impression on me, and convinced me that no case should be

abandoned as hopeless, so long as a sea-voyage remained untried.

The gentleman with whom I went to the West Indies in January, 1834, had been for two months previous harassed with cough, and, during the latter part of the time, with purulent expectoration, and two paroxysms of hectic daily; yet we had no sooner entered the tropics than these symptoms entirely vanished, nor have they since in any degree returned. But a yet more striking instance occurred in the person of Madame C., a lady of New York, who was of our cabin company. This lady had an abscess of the lung, (as I was informed by Dr. Depeyre, her physician, who was also on board,) and was so exhausted by disease that we had little hope of her reaching the West Indies. On one occasion, when the ship was off Bermuda, we hourly looked for her dissolution; and yet to our astonishment she began to revive on entering the tropic, and soon spent a considerable part of every day on deck. We landed at Barbadoes, and this lady proceeded with her physician to Porto Rico. I heard nothing more of her till nearly twelve months afterwards, when I was informed that she returned to New York the same year, with her health seemingly restored. Of her situation more recently I have not been informed.

A gentleman of two and twenty years of age, whom I met at Barbadoes, and who came there with confirmed phthisis, assured me that while he was on the sea, all his symptoms disappeared; but that he could not remain three

days on shore without a return of cough, pain, hæmoptysis, fever and colliquative perspiration. I afterwards fully tested the accuracy of his statement, by sailing in the same vessel with him from Barbadoes to Santa Cruz, and subsequently to Charleston. On ship-board he appeared to be in good health; but he had not been more than three days in Charleston before he had repeated and profuse hæmoptysis, conjoined with a recurrence of all his worst symptoms. So manifestly deleterious was the land air, and so beneficial that of the sea, that he immediately made arrangements for another and more protracted voyage.

While travelling in Europe in the month of May, 1824, I caught a severe cold, which increased in violence for nearly a week, when I became apprehensive that my lungs would suffer in consequence. General indisposition and feverishness by day, and cough and oppression at night, wholly deprived me of rest. Under these circumstances, I embarked in a ship for the United States: I went on board before day-light in the morning, fell asleep upon the deck, and remained in this situation for several hours. On awaking, the vessel was fairly at sea, my catarrh had almost wholly left me, and in another day was absolutely gone; nor did it return in the least degree, although the voyage proved wet and tempestuous, and was protracted to thirty-seven days.

One of the strongest proofs of the efficacy of sea-voyaging as a preventive of consumption, is derived from the exemption of sailors, (as a general rule,) from that disease. Dr. Lind says, "that out of five thousand seven

hundred and forty-one sailors, who were admitted into the naval hospital at Haslar, near Portsmouth, in two years, only three hundred and sixty of them had consumptions; and in one fourth of these (he continues) it was brought on by bruises and falls." "Hence it may be concluded," adds Dr. William P. C. Barton, "that the exercise of sailing invigorates the lungs, and fortifies them against accidents. In addition to this fact, I may state, that out of ten hundred and forty-five patients who came under my care from the first of June, 1809, to the first of June, 1811, from among four thousand men exposed to a variety of climates in different parts of the United States, in the bay of Biscay, the British Channel, the Atlantic Ocean, and in different sea port towns—there were only six cases of pulmonary consumption."*

It has often surprised me, that while hundreds of persons with delicate lungs, and many of them in the last stage of consumption, annually sail from this country for foreign parts, we rarely hear of any of them dying at sea. They mostly live to return; and if I may venture an opinion from the observation of many examples, I should say, that in a great majority of cases life is much prolonged, and in many instances the very seeds of disease are to appearance eradicated by sea-voyaging and foreign travel.

The salutary effects of sea-voyaging, have been variously explained. Some authors have attributed it to the sea-sickness; whence they have attempted to imitate

* Notes to a translation of Dr. Gregory's Dissertation on the Influence of Climate. (*De morbis cœli mutatione medendis.*) Philadelphia, 1815.

this process, by giving emetics and nauseating medicines on land. Although sea-sickness is obviously beneficial to most persons, it can only perform a collateral part in this case, because it will not be found that the advantage bears any proportion to the continuance of this distressing sickness: the latter on the contrary is always essential, for a large number of those who are benefitted escape it altogether. As examples I may cite the two gentlemen just mentioned, who came under my personal observation. Therefore, although sea-sickness is often beneficial, it is *not essential* in sea-voyaging.

The advantage of the sickness itself, has been accounted for by Dr. Jenner and others on the reasonable supposition, that it promotes the *absorption* of tubercles. "Without putting theory to the rack," says Dr. Jenner, "may it not be supposed that the stomach and intestines, being thus deranged in their ordinary functions, and the supplies for the absorbents being scanty and deteriorated, they the more readily seize on such bodies; not those only that are extraneous, but which come so near that point as tubercles."*

In support of this suggestion, Dr. Jenner cites the fact, that nearly all the popular remedies hitherto employed in consumption, consist in such articles as produce a nauseating effect on the stomach.

Dr. Gilchrist has, I think, satisfactorily explained another advantage of sailing, viz: that which arises from the exercise it affords: "every time the ship pitches, a strong,

* Vide Dr. Baron's Inquiry on the Tuberculated Accretions of Serous Membranes, p. 162.

involuntary contraction of the muscles of the abdomen is felt, as if the person were sinking or falling, and endeavouring to recover or save himself; which, upon the rise of the ship, immediately ceases, and the muscles are a moment at rest; till by the fall of the ship, they are again put into action. Thus all the viscera of the lower belly are for a great while, under a frequent, constant, alternate compression and relaxation.”* He adds that the viscera of the thorax necessarily participate in this exercise, by which the circulation throughout the body is rendered more equal. These considerations, in connection with the change of air, of scene, and of habits incidental to a voyage, will serve to explain the great advantage that so generally results from it.

Candour, however, compels me to admit that sea voyaging, in common with all other remedial agents, will sometimes disappoint us. A melancholy example not long since came to my knowledge in the fate of Dr. H., who went to India as physician to one of my friends.† He had been for some time in delicate health, and was predisposed to consumption. On the second night of his being at sea, (Oct. 1833,) he was taken with violent vomiting, which induced gastric inflammation, loss of voice, and extreme costiveness. Cough and hæmoptysis followed, with every other symptom of a rapid consumption, and this young man died a few days after his arrival in Calcutta; the voyage having been of about four months' duration.

* The Use of Sea Voyages, &c., p. 61.

† Wm. A. Foster Esq. from whom I derive the circumstances here recorded.

This is an extraordinary exception to the usual results of sea voyaging; but it is explained by the presence of a violent gastritis, which accelerated the development of a pre-existing tuberculous disease.

Yet, independent of such a contingency, I do not pretend that sea-voyaging is uniformly beneficial; for there are constitutions upon which long-continued and harassing sea sickness may produce a lasting injury.

CONCLUSION.

IT is evident from the facts narrated in the preceding chapter, that *change of climate* is, of all other agents, the most powerful in altering the condition of the human system, and thereby eradicating disease. When phthisis attacks a resident of the West Indies, the first thing is to send him *beyond* the tropics; and I was assured by Dr. Stedman Sen., of Santa Cruz, that he had repeatedly observed his consumptive patients to be greatly improved in health by passing a year or two (including the winter season) in England, Denmark, and the United States. It is thus, also, that invalids are benefitted, as we have already seen, by removing temporarily from a healthy to an unhealthy climate, from a clear atmosphere to one charged with miasmata.*

An opinion is very prevalent that *cold* air is hurtful to the lungs; but I am satisfied that it is only so when conjoined with dampness, and especially such dampness as is common on our sea-coast. A cold, *dry* atmosphere is not only favourable to the health of the pulmonary organs,

* Every one knows the benefits which are derived from change of air, in many diseases, when that change is only from one part to another, a few miles separated. Nay, it is proved, beyond all possibility of doubt, that the change from what is considered a good, to what is thought a bad air, is often attended with marked good effects. Hence it is very reasonable to conclude, that the *mere change* of one kind of air for another, has an exhilarating or salutary effect on the animal economy.”—JOHNSON, *On Indigestion*.

but it sometimes acts as a cure in their diseases, even when the latter have assumed the appearance of genuine consumption.

Dr. Wheaton, of the United States army, and now resident at the Military Academy, West Point, has favoured me with some valuable testimony on this point. He states that he was stationed at Sault St. Marie and Mackinaw, from the spring of 1822 to that of 1827, and during this period had ample opportunity of observing the diseases of that severe climate; and he assures me that pulmonary affections were of unfrequent occurrence, and that those persons who went there with such affections, were surprisingly benefitted. "This," says Dr. Wheaton, "I have attributed in a great measure to the dryness of climate; as for instance, during the winter of 1822-3, from the middle of November to the first of March, there was scarcely any rain, and the thermometer was once as low as 32° below 0. It was during this winter," he continues, "that I observed the gradual recovery of an officer and two soldiers from what I considered *confirmed phthisis*. One of these was a sergeant, who, as he came on with a detachment of recruits, had contracted a cold on the canal, and was so ill as to be left at Detroit; but although no better, he was sent on to his regiment at Green Bay in the autumn. When I arrived there on the first day of October, 1822, I found him in the hospital with every symptom of confirmed phthisis. But to my surprise, so far from getting worse as the season advanced and the cold increased, (although he was out every day in the coldest weather) he began to improve in health, and was

so well in the spring as to become my hospital steward; and he did that duty for more than four years, *a perfectly well man.* He died of a fever at St. Louis in 1827.

“The other case was that of a soldier, under (in many respects) similar circumstances. His disease originated at the military post, in the summer season, from taking cold while sleeping on the ground when much heated. The recovery of this man took place in the coldest weather.

“A young officer joined the regiment, late in the autumn of 1825, with a bad cough, night sweats, regular exacerbations of fever, and, to say the least, a very equivocal expectoration. He had spent the previous winter in *Florida*, but getting no better, he said he had come to die with his regiment. But so far from this, he began to mend as the cold weather came on; and in the spring he was the first man that went down the river in an open batteau, while the ice was yet remaining, and has ever since continued perfectly healthy under the most severe exposures.”

Dr. Wheaton, in conclusion, declares his belief, that patients labouring under chronic pulmonary affections, would be more likely to receive benefit from a winter spent in the *cold, dry* climate of Mackinaw, than in an atmosphere of a higher temperature nearer the sea-shore.

I can corroborate the preceding statement by citing my own case. In August, 1834, I contracted a most violent bronchitis, which did not yield its acute form until I had undergone the usual active treatment. Then followed the chronic stage, aggravated by the slightest ex-

posure. After being thus harassed for upwards of four months, after having experienced hectic fever, emaciation, colliquative perspiration, a distressing diurnal cough, and consequent debility, I experienced unqualified relief for the first time during the first week in January, 1835, when the thermometer was for several days below zero, and the air piercing cold, but perfectly dry and clear. The variable atmosphere that soon followed, brought with it some of my former symptoms, but greatly mitigated, and they gradually passed away on the approach of summer.

What are we to infer from the preceding facts? It is evident that *both extremes* of temperature are sometimes salutary; and that great changes, by acting powerfully on the constitution, are capable of breaking those chains of morbid action, which constitute the most inveterate maladies to which man is subject.

APPENDIX.

No. I.

MAXIMS FOR INVALIDS WHO VISIT THE WEST INDIES IN SEARCH OF HEALTH.

1. Do not arrive within the tropics earlier than December, nor remain there after April.

The seven months not included in the above period are proverbially unhealthy, especially to constitutions not inured to the climate. Yellow fever and dysentery are then prevalent, and extremely fatal. Independently of these considerations, the air is more hot and sultry, and of course more enervating.

2. Let your wardrobe contain at least a dozen and a half of linen shirts, plenty of flannel, a full provision of thin clothes, and at least one complete suit of warm cloth dress. Although the days are always warm, the evenings are occasionally cool enough for warm clothes, which should be scrupulously put on whenever the air conveys the least sense of chilliness.

3. Wear flannel next the skin, both on the body and limbs, without intermission; for it has been proved to be the best preventive of tropical fevers.

Many persons are disposed to doubt the necessity of this precaution; but the experience of the inhabitants of the West Indies, together with that derived on the great scale from the army and navy, go to prove that it is absolutely essential to health. Dr. Coombe, of Edinburgh, has published a letter* from Captain Murray, of the British navy, which would be sufficient evidence on this head, if all other testimony were wanting. That officer's crew, consisting of one hundred and fifty men, were compelled (for sailors must be compelled to take care of themselves) to wear flannel both in shirts and drawers, and to avoid wet clothes and spirituous liquors. With these precautions, although the same crew had just returned from the coast of Labrador, Captain Murray cruised for four months in all parts of the West Indian seas, from Caracas to Tampico, and visited all the islands from Tobago to Cuba, inclusive; and finally returned to England without the loss of a man, and indeed without having one on the sick list.

I state these facts with pleasure, because they must prove to every reflecting mind, how much comfort and safety will depend on the practice of a few simple rules.

4. Avoid the night air, and be in bed by ten o'clock. If you leave a window open, be careful that it does not blow upon your bed.

It is requisite, especially for invalids, to sleep eight hours of the twenty four: the heat of the day induces

* The Constitution of Man considered in relation to external objects p. 134.

fatigue and languor at night, which require long and, if possible, unbroken repose.

5. Rise with the sun; that is to say, at six o'clock, and use exercise for an hour, or for an hour and a half before breakfast; but never go out until you *have taken some light nourishment* as a biscuit, and a cup of tea or coffee.

Breakfast is usually served in the West Indies at nine o'clock; it is too long to fast until this hour, especially, if using exercise.

6. Pulmonary invalids should entirely forego sea-bathing.

All the West India physicians whom I have consulted on this subject, joined in considering the practice as very deleterious to weak lungs.

7. Seldom or never expose yourself to the sun between the hours of 10 A. M. and 5 P. M.: but if you take outdoor exercise at that time, let it be in a covered vehicle.

Every creole well knows that the intense sun of his climate generates bilious attacks, severe head-aches, and often the most obstinate forms of fever. Such exposure is, moreover, extremely exhausting; and even where it does not occasion acute disease, if persisted in it impairs the health.

8. If you become wet with perspiration, or from having been caught in a shower, it is safest to put on dry clothes immediately, and take some light refreshment, including a glass of wine sangaree: but when you cannot make a

change, injury seldom results from allowing the clothes to dry on your person, provided you scrupulously avoid a draft of air, and keep up a moderate excitement by means of gentle exercise.

9. In a climate where the breeze is so constant, drafts of air are sometimes unavoidable: when exposed to them it is necessary to face them, otherwise they increase catarrhal affections, or aggravate those that have pre-existed.

10. Observe invariable temperance in eating and drinking, and scrupulously avoid ardent spirits.

Persons who resort to tropical climates for the benefit of their health, too often counteract all the advantages they might otherwise enjoy, by excesses in eating and drinking. These indulgences are generally resorted to under the plea of preventing the fevers, and other diseases; incident to such latitudes: a most mistaken idea, inasmuch as a system supported by such artificial means, suffers infinitely more when disease makes its appearance; and those appliances which, under other circumstances, have a cordial and restorative effect, become wholly unavailing from previous abuse.

The water is good in all the islands I visited, nor is there the least excuse for tempering it with brandy. During my sojourn within the tropics I never felt the necessity for brandy and water.

The lighter wines, claret, sauterne, and hock, alone or diluted, suit most persons well; and sangaree of Port,

Sherry or Madeira, is both refreshing and wholesome. I can also recommend malt liquors at dinner to those whom they agree with; but, as a common drink, there is no substitute for water.*

11. Abstain from the use of tobacco; for I know of no indulgence more injurious to a delicate constitution within the tropics, than the smoking and chewing of this enervating plant.

12. Fruits are most wholesome in the morning, and should rarely be eaten at night; and acids of all kinds should be used sparingly. Bowel affections, especially cholera morbus and dysentery, are induced by neglect of this precaution.†

No II.

ON THE EXISTENCE OF PULMONARY CONSUMPTION AMONG THE NORTH AMERICAN INDIANS.

IN the preface to the first edition, I called the attention of the profession to this subject, in the hope that some one,

* "It is a general observation, that women enjoy a much better state of health in the West Indies than men, and are not so subject to yellow fever, owing probably to their more temperate way of living." LIND, *On the Diseases of Hot Climates*, p. 89.

† Persons who have weak eyes, will find great inconvenience from the intense reflection of the sun from the white roads in some of the limestone islands, as Barbadoes, Antigua, and Santa Cruz. A pair of coloured spectacles is the only remedy.

whose situation had enabled him to form an opinion, would respond to the inquiry. I have not been disappointed; and I have now the pleasure to give publicity to the following facts, from the pen of my friend Dr. Z. Pitcher, of the United States army. This gentleman has been for many years attached to the military service, and has been most of the time stationed in the immediate vicinity of the Indian settlements, from the shores of Lake Superior to the wilds of Arkansas. These circumstances, conjoined with his professional zeal and habits of observation, claim implicit confidence for the following paper.

“Fort Monroe, October 14th, 1834.

“To SAMUEL GEORGE MORTON, M. D.

“MY DEAR SIR:—Before expressing my opinion on the subject to which your inquiries are directed—the existence or non existence of consumption among the aboriginal inhabitants of North America—I will give you a summary sketch of the tribes and of their geographical distribution, to which my observations have extended.

“In 1822, my duties as a member of the Army Medical Staff brought me in contact with a mixed race of people, chiefly Chippeways and Ottawas, who reside on the streams which fall into Saganaw bay in the peninsula of Michigan. Here my attention was first drawn to this subject by the appearance of a fine but pensive looking youth, who stood in the back ground of a very exciting scene, in which the actors were a party of whites and Indians, who were skating for a prize on the frozen sur-

face of the Saganaw river. This case was one that resulted from pulmonic inflammation; and having been, as organic affections among these people always are, badly treated, it terminated fatally soon afterwards. Between the spring of 1825 and the autumn of 1828, my range of observation has extended from the Sault de St. Marie, to the Fond du Lac of Lake Superior; a region of country hunted by the Chippeways: and from thence, in the fall of 1829, I passed into the country occupied by the Menominies, which lies about Green bay. For the last four years my duty has kept me on our southwestern frontier, where I have met with the Osages of the Neosho and Verdigris rivers, the Pawnees of the Platte, the Omahas of Missouri, the Konzas of Konzas river, the western Creeks, Cherokees, Choctaws, Senecas, Shawnees and Delawares. The country over which these people are spread, extends from Lake Superior to the Red river of Louisiana, and includes about 12° of Latitude. The tribes named in this sketch, who inhabit the lake country, live by the precarious tenure of the chase; dress in its products, or clothe themselves in materials procured from the traders, which they receive in exchange for their furs. These are made up in their rude and primitive mode of manufacturing the articles of their wardrobe. Their tenements are the bark or rush-mat lodge, and their winter abiding places the depths of the primeval forests. The Osages, Pawnees, Konzas, Senecas and Delawares live, so far as regards the effects of habit upon their physical well-being, much like the tribes before named, except that they are more exposed in winter; the country in which they reside being

in a great measure destitute of timber. The remaining tribes, as is pretty well known, are making rapid approximations to the condition of civilised nations.

“ Throughout the whole of this region, the climate has one characteristic of universal application, extreme variability. The average temperature of the southern portions, as we should expect, is much greater than at the north; but the extremes of the thermometric range, are by no means so diverse as at first view might be supposed. At the falls of St. Marie, for example, the mercurial column will rise as high as 98° of Fahrenheit, and in winter sinks to 30° below zero; while at Fort Gibson, on the Arkansas river, its range is from 105° above, to 15° and 20° below. Changes of temperature no where occur more suddenly than here. I have premised thus much, to put you in possession of the means of testing the authenticity of any conclusions I may arrive at: and now for the answer to the question you have put me. My reminiscences of twelve years intercourse with our Indian tribes, authorise me to assure you, that the consumption is a disease familiar to all those with whom I have had any personal acquaintance; and I think also that I may go further, and state, without fear of contradiction, that it is prevalent among all the natives of the northern section of our continent.* I have the authority of Colonel A. P. Chouteau, of St. Louis, for saying that it occasions a large

* [Dr. J. W. Francis, in a note in the first number of the U. S. Med. and Surg. Journal, makes the following remarks: “Dr. Rush declares that pulmonary consumption is wholly unknown to the North American Indians; but this declaration is not tenable. The celebrated chief Red-Jacket, in an inter-

share of the mortality which annually occurs among the Mandans of the upper Missouri; and I have repeatedly been assured, by the officers of the Hudson's Bay Company, of its occurrence in all the tribes subject to their jurisdiction. The attempt to settle the pathological relations of phthisis and scrofula, in a race whose characteristics of temperament are uniformly the same, as well as the endeavour to ascertain how far both are modified by the habits and pursuits of this ill fated race, who, till recently, seem to have been doomed by an inexorable and inscrutable destiny to national annihilation, would form subjects of interesting inquiry. The first has already passed through abler hands, and the latter requires for its decision, a more patient and careful investigation than my erratic life and accidental contact with them, permit me to bring to its examination. At the same time that I withdraw from a full investigation of these important questions, I venture to give as the result of my experience these opinions: That consumption is of more frequent occurrence than scrofula among the Indians, unless, with those pathologists who contend for its lymphatic origin, we identify these affections, and regard consumption in all cases a scrofula of the lungs; and that scrofula *per se* is oftenest to be seen in those tribes who stand, as it were, midway between the savage and the civilised state: but even there not so often as consumption.

view I had with him at his reservation near Buffalo, in September, 1823, gave me the particulars of the cases of no less than seventeen of his relations, (including I think, ten or eleven of his own children,) who had died of pulmonary consumption.

“ It has been remarked by others, and my experience goes to confirm the observation, that the mixed blood descendants of the European and the Red race of Gmelin, are more liable to become the victims of phthisis, than the full blooded Indian. With me it has been held as doubtful, whether this should be ascribed to liability resulting from congenital defect in organisation, or to an increased susceptibility to atmospheric influences growing out of difference in their fashion of dress, and style of living, or to both combined.

“ If there is any truth in my observations, haemoptysis does not bear the same proportion to the number of deaths from consumption among the natives, that it does with us. This appeared to me a remarkable fact, when I first became assured it was one. It is true that I had not then learned to appreciate the effects that the various avocations produce upon the respiratory apparatus of the civilised races, whence so many of this description of cases take their origin; neither will I now, without a more critical acquaintance with the anatomical characters of the Indian’s consumption, attempt to say whether this discrepancy in the characteristics of the disease, as it appears in the two races, should be accounted for in that way.

“ Among the Indians, as among the whites, the females appear to be most frequently the victims of this enemy to youth and beauty. One of my last professional acts before leaving the western country was to prescribe for an interesting young Choctaw girl, who bore externally the signs of scrofula, and gave internal evidence of the

encroachments of phthisis. At this time there are among the Osages several females affected with the usual indications of pulmonary consumption, who obtain periodical relief in the semi-annual excursions which their tribes make into the vast prairies of the West, in pursuit of the buffalo, and again relapse when they return to a state of inactivity in their towns. So far as I am capable of forming an estimate of comparative frequency of both scrofula and consumption in the two races, I should say that the result is decidedly in favor of the red man.* If this be true, it appears to me to admit of easy explanation. We have in our intercourse with cultivated people, daily opportunities of seeing children with feeble vital endowments, sustained by the vigilance and tender appliances of anxious and affectionate friends, who have held out till budding adolescence began to ripen into the maturity of manhood, then to sink into atrophy and die; while these same children, by the hardening processes of a barbarian mother, would have been cut off in early infancy, and numbered among the blessed of their tribe. In this way, too, you may account for the hardy aspect of our wild and untaught foresters; for none but those who are gifted with great organic force, can endure the cold, the buffetings, the nakedness, the alternations of abstinence, enforced by want, and the excesses of suddenly

* So far as regards scrofula I have been told by an intelligent Army Surgeon, Dr. I. I. B. Wright, that the Seminole Indians are exceptions to this remark. But as his acquaintance with that people was of a date anterior to his entrance upon the theatre of his profession, I am induced to believe that he has mistaken the *yaws* for scrofula, which, from other sources, I know to prevail among them.

supervening and improvident plenty, to which their young are exposed. Yours, &c.

“Z. PITCHER.”

No. III.

FOR the subjoined statistical information, I am wholly indebted to the politeness of my friend Dr. G. Emerson of this city, a gentleman of intimate and accurate acquaintance with this department of medical knowledge.

“The following estimate exhibits the average mortality from consumption and acute diseases of the lungs, in the four largest cities in the United States, viz: Boston, New York, Philadelphia and Baltimore.

	N. York.	Boston.	Philad.	Balt.
“Average annual proportion of the general mortality to the population, one in -----	39.36	44.93	47.86	39.17
“Average of the mortality from consumption alone, to the general mortality, one in -----	5.23	5.54	6.28	6.21
“Average of consumption and acute diseases of the lungs, one in -----	4.07	4.47	4.90	5.33

“From the above estimate it appears, that the deaths from consumption and acute diseases of the lungs, constitute a larger proportion of the general mortality of New York, than of either of the other named cities; the deaths from consumption alone being one in 5.23, and of this disease with acute affections of the lungs, one in 4.07.

“Boston exhibits the next largest proportion; namely, of consumption alone, one in 5.54, and of this disease and acute affections of the lungs, one in 4.47.

“Philadelphia and Baltimore present very similar proportions: both of which are much lower than those of the two first named cities.

“In making the computations for Boston, New York and Baltimore, I availed myself of data derived from the Medical Statistics of Drs. Niles and Russ, published in 1827. The averages are drawn from seven years' observation, viz: from 1820 to 1826 inclusive. The estimates for Philadelphia were made from data collected by myself; and I chose the ten years preceding 1820, as being less affected by any casual circumstances operating in the locality, than the subsequent years, during which the proportional mortality from consumption has appeared much smaller.

G. EMERSON.”

No. IV.

RELATIVE FREQUENCY OF TUBERCULOUS DISEASE IN THE DIFFERENT ORGANS AND AT DIFFERENT AGES.

(See pages 42 and 70.)

THE occurrence of tuberculous disease in the different organs has been elaborately investigated by M. Louis, from whose work I copy the following table, showing the results in three hundred and fifty dissections of persons who had died of phthisis: of this number tubercles were found in the

Small intestines in one-third of the cases.

Large intestines in one-ninth do.

Mesenteric glands in one-fourth of the cases.

Cervical glands in one-tenth do.

Lumbar glands in one-twelfthth do.

Prostate in one thirteenthth do.

Spleen in one-fourteenthth do.

Ovaries in one-twentiethth do.

Kidneys in one-fortiethth do.

Brain in one instance only,

Cerebellum do.

Spinal cord do.

Uterus do.

Ureters do.

From these and subsequent observations, M. Louis has deduced the law "that in the *adult* subject, whenever tubercles exist in any part of the body, they of necessity exist also in the lungs."*

In one hundred adults who had tubercles in the lungs, M. Lombard found them in the other organs as follows:†

		Times.
In the intestines -	- - - - -	26
Mesenteric glands	- - - - -	19
Bronchial glands	- - - - -	9
Cervical glands -	- - - - -	7
Spleen - - - - -	- - - - -	6
Lumbar glands - - - - -	- - - - -	4
Sub-peritoneal cellular tissue	- - - - -	4
Axillary glands - - - - -	- - - - -	3
Glands of the anterior mediastinum	- - - - -	3

* Memoir of James Jackson Jr. M. D. p. 160.

† I quote these facts from Andral, Anat. Path. t. i. p. 423,

		Times.
Sub-arachnoid cellular tissue	- - -	2
Spinal marrow	- - - -	2
False membranes of the pleura	- - -	2
Do. of peritoneum	- - -	2
Intercostal muscles	- - - -	2
Ovaries	- - - -	2
Parietes of the gall bladder	- - -	1
Liver	- - - -	1
Cavity of the pleura	- - - -	1
Posterior mediastinum	- - - -	1
Vertebræ	- - - -	1
Ribs	- - - -	1
Omentum	- - - -	1
Uterus	- - - -	1
Prostate	- - - -	1
Sub-mucous tissue of the bladder	- - -	1
Brain and Cerebellum	- - - -	1
Medulla oblongata	- - - -	1

M. Papavoine* has pursued the same inquiry in reference to children, and has observed that of fifty children examined by him, the relative frequency of tubercles in the different organs was as follows:

		Times.
Brain		5 or in one-tenth of the cases.
Cerebellum		3 or about one-sixteenth.
Lungs	38	do three-fourths.
Stomach	1	do

* Journal des Progrés des Sciences et Institutions Médicales. Tome 1, p. 93, 1830.

	Times.		
Small intestine	12	or about	one-fourth.
Large intestine	9	do	one-fifth.
Pleura	17	do	one-third.
Peritoneum	9	do	one-fifth.
Membranes of the Brain	3	do	one-sixteenth.
Pericardium	3	do	one-sixteenth.
Liver	14	do	two-sevenths.
Spleen	20	do	two-fifths
Kidneys	2	do	one-twenty-fifth.
Pancreas	1	do	
Bronchial glands	49	do	
Mesenteric	25	do	one-half.
Cervical	26	do	one-half.
Vertebræ, radius, tibia,	1	do	

M. Papavoine comes to the following conclusions as to the relative frequency of tubercles in the different organs:

1. "That tuberculous matter is most frequently seen in children in a greater number of organs at the same time.
2. That the lymphatic glands, particularly those at the bifurcation of the bronchia, are almost constantly the seat of tubercle.
3. "That tubercles are often found in the glands exclusively, and that in many instances they appear to have originally formed there."—

No. V.

INFLUENCE OF AGE.

(Vide page 70.)

M. PAPAVOINE* has published some important observations on this point, from which, however, I shall merely select the following table, showing the relative frequency of tubercles from the second to the fifteenth year of life. His results were obtained from 408 cases.

Age.					Cases.
At 2 years or under	-	-	-	-	73
3	-	-	-	-	64
4	-	-	-	-	46
5	-	-	-	-	35
6	-	-	-	-	32
7	-	-	-	-	29
8	-	-	-	-	24
9	-	-	-	-	16
10	-	-	-	-	18
11	-	-	-	-	12
12	-	-	-	-	24
13	-	-	-	-	10
14	-	-	-	-	11
Age not noted	-	-	-	-	14
					<hr/>
					Total 408

With respect to the frequency of tubercles after the

* Journal des Progrés, etc. t. 2. p. 104, 1830.

fifteenth year, sufficient additional information may be derived from the following tables by Bayle and Louis.

In 100 instances, Bayle found the proportion to be as follows:

From 15 years to 20	-	-	-	-	10
" 20 "	30	-	-	-	23
" 30 "	40	-	-	-	23
" 40 "	50	-	-	-	21
" 50 "	60	-	-	-	15
" 60 "	70	-	-	-	8
				Total	100

M. Louis's observations in 123 cases afforded the following results:

From 15 years to 20	-	-	-	-	11
" 20 "	30	-	-	-	39
" 30 "	40	-	-	-	33
" 40 "	50	-	-	-	23
" 50 "	60	-	-	-	12
" 60 "	70	-	-	-	5
				Total	123

No. VI.

(See page 68.)

THE following note on the influence of insanity on pulmonary consumption, has been politely furnished, at my

request, by my friend Dr. Charles Evans, physician to the Frankford Asylum for the insane.

“ It is a commonly received opinion that the insane are peculiarly predisposed to phthisis pulmonalis, and that the latter is often the means of arresting mania. As far my own observation goes, I have strong doubts of there being a more general prevalence of a tubercular diathesis amongst those afflicted with insanity than others; but I am fully convinced that this disease is often invited and developed, under the use of those remedial means to which it is necessary to resort in the treatment of mania.

“ The great loss of blood which is called for in cases of acute inflammation of the brain and its appendages, together with the low diet and other antiphlogistic remedies; and the continued morbid vigilance which is often the attendant upon insanity, leave the patient in a state of exhaustion altogether favourable to the development of tubercles. Add to this, the strict confinement to one apartment, and many of them crowded together, to which the insane are too frequently subjected in general hospitals, without the means of taking sufficient exercise, or the privilege of inhaling pure air; and the number of deaths by phthisis may be easily accounted for, without supposing the existence of any peculiar connection between the two diseases.

“ I have never seen a case of insanity where the deranged manifestations of the mind were removed by the presence of phthisis, though I have seen several in which they were much improved: I have also repeatedly witnessed the converse; where the invasion of the brain by

disease, has produced, for a considerable length of time, a suspension or recession of the symptoms of that in the lungs: and hence I believe that consumption is often silently at work where its presence is not suspected; and it is not until it has nearly completed the work of destruction, that cough and expectoration reveal the secret of its insidious ravages.—Within the time I have been connected with Friends' Asylum near Frankford, a period of near five years, there have been in that institution two hundred and forty-six patients; among whom thirty deaths have occurred, three of which were from consumption, and one patient had it who died of another disease. Eight of those discharged from the institution in that time were labouring under phthisis, and two now there have the same complaint. In several of these cases, the disease of the lungs was evidently retarded in its full development by the presence of that in the brain; and at least two of them, who left the Asylum cured of their insanity, soon after died of consumption; but in all the cases which I have had the opportunity of observing, the disease was speedily fatal after the softening of the tubercles."

No. VII.

(See page 66.)

FOR the following abstract of an extremely interesting memoir by Dr. Lombard, I am indebted to the kindness of my friend Dr. Thomas Stewardson.

On the influence of different professions upon phthisis pulmonalis; by Dr. Lombard, of Geneva, published in the Annales D'Hygiène, vol. XI. first part, for the year 1834.

“ The frequency of diseases of the chest amongst certain classes of workmen, has been long since remarked by a great number of authors; but most of them have contented themselves with simply stating the fact, without endeavouring to support it by incontestible proof, although statistical researches might have supplied them with a very simple mean of verifying their opinions, and converting them into something positive and tangible. The memoir which I have the honour of presenting to you, has been undertaken for the purpose of discovering whether the frequency of phthisis, in certain occupations, might not throw some light upon the causes and treatment of this cruel disease.”

This paper is founded, in fact, upon a large body of observations collected in the hospitals of Hamburg, Paris and Vienna, and in which the profession of the different individuals had been recorded. But the most important documents, and those upon which the author has mainly depended for determining the proposed questions, were collected at Geneva.—Dr. L. extracted from the register of deaths, from 1776 to 1830, the profession of every individual who had died in the city of Geneva and its environs. The total number of deaths amongst male adults during this period, was eight thousand eight hundred and twenty-nine, whilst that of consumptives was one thousand and three; which gives a mean of one hundred and fourteen of the latter to every one thousand deaths.

The occupations of females were not recorded with exactness before the year 1816; so that the table of deaths amongst them contains only one thousand seven hundred and sixty-seven, of which one hundred and eighty-seven were the result of phthisis.

Dr. L. then goes on to class the different professions, according as the proportion of deaths from consumption which each presents is above or below this mean. Those in whom the proportion transcends the mean are, of course, regarded as favouring the production of consumption, whilst those in which it falls short must be regarded in a contrary light.

The next and most important question to be settled is, what are the *particular circumstances* belonging to the different professions which may be regarded as the cause of the frequency or rarity of phthisis amongst them. To accomplish this end, all those professions in which some common condition predominates are grouped together, and the mortality from phthisis in this group is compared with the general mean. Thus, to use the language of Dr. Lombard, each injurious influence can be isolated, and we can obtain a result which is capable of being compared with the general mean. In this way the influence of riches and poverty, of an active and sedentary life, and of the various conditions of air which we breathe, are determined with precision and in the most rigorous and convincing manner.

Our space will not allow us to follow Dr. Lombard in detail. Having given a general idea of the method which he has adopted in order that the degree of importance

which attaches to his conclusion, might be appreciated, we shall proceed to give a summary, and chiefly in his own language, of the results to which he has arrived.

1. The conditions which favour the development of phthisis are, poverty, a sedentary life with the absence of muscular exercise, the impure air of work-shops, curved position of the body, the inhalation of certain mineral or vegetable vapours, and finally, an atmosphere charged with coarse or impalpable powders, or light elastic and filamentous bodies.

2. The conditions which prevent its development are, riches, an active life and in the open air, the regular exercise of all parts of the body, the inhalations of aqueous vapours, or animal or vegetable emanations.

The degree of influence exercised by each of these conditions, is shown in the following Table, in which the mean number of consumptive patients in the different classes of workmen exposed to their operation, is given.

Mean number of consumptives one hundred and fourteen in every thousand.

1. *Injurious Influences.*

1. Mineral and vegetable emanations - - - - -	0.176
2. Dust - - - - -	0.145
3. Sedentary life - - - - -	0.140
4. Confinement to work-shops - - - - -	0.138
5. Dry and hot air - - - - -	0.127
6. Curved position - - - - -	0.122
7. Certain movement of the arms, producing thoracic concussions - - - - -	0.116

2. Preservative Influences.

1. Active life (muscular exercise) - - -	0.089
2. Exercise of the voice - - - -	0.075
3. A life passed in the open air - - - -	0.073
4. Animal emanations - - - -	0.060
5. Aqueous vapours - - - -	0.053

There are certain professions which can only be followed by persons in comfortable circumstances; such as lawyers, merchants, physicians, &c. Dr. L. has grouped together all the professions, and compared the average mortality from phthisis amongst them with that amongst the poor, by which he finds that the latter are twice as much exposed to its ravages as the former.

From the above table it will be seen that, with the exception of an impure air, the absence of muscular exercise and confinement to work-shops, are the most active causes of the development of phthisis. Those occupations whose deleterious influence is least marked, are those which require a curved position of the body and violent exertion of the arms; but these last two do not merit the importance which has been attached to them by another source, they augment only by 0.02 to 0.08 the mean mortality.

Of those conditions which exert a favourable influence, a moist air is the most important; since the workmen who breathe in it are only half as liable to phthisis as others. Next in order are animal emanations. The preservative effects of muscular exercise, and that in the open air, are less marked than the preceding, though not less certain,

since they diminish by one third the mean mortality from consumption.

In conclusion Dr. Lombard makes the following practical application of the facts contained in this memoir.

1. "Some authors have regarded phthisis as a purely local disease, and have thought that the cure should be attempted, by means of medicines whose action was more especially upon the lungs. This opinion is not confirmed by statistical researches. In fact, if we divide the conditions which augment the frequency of phthisis, into those which are general in their operation, and into those whose action is more especially directed upon the lungs, we arrive at the following result. Those circumstances which modify the whole economy, such as a sedentary life, the absence of exercise, and the confined air of work-shops, produce one hundred and forty consumptives in a thousand; while on the contrary, those whose action is limited to the lungs, such as the inhalation of hot air and various vapours and dusts, a curved position and concussions of the chest, count only one hundred and thirty-seven in a thousand; from whence it must be concluded that phthisis is a disease of the general system, which is not limited to the lungs, and consequently to cure which, we must begin by modifying the whole economy."

2. The rarity of phthisis amongst nurses, and other attendants in hospitals, shows what little foundation there is for the opinions of those authors who regard this disease as contagious.

3. The impurity of the air in work-shops being one of

the most prolific sources of this malady, it becomes important to correct it as much as possible by means of free ventilation. When this cannot be done, the workmen should only remain a few hours at a time in the work-shop, and in the intervals be allowed to breathe a pure air. The influence of pure air is so important for the healthy performance of the functions of the lungs, that many physicians have made it the base-work of a curative treatment of phthisis, the utility of which seems to be entirely confirmed by statistical researches.

4. "We have seen that the humidity of the air exerts a very remarkable influence upon diseases of the chest, of which it diminishes the number. It is evident from this, that in the choice of a climate favourable to consumptive patients, humidity should be taken into consideration, and that, consequently, the moist climates of Pisa and Rome should be preferred to the less mild ones of Nice and Naples; and as to the dry and clear air of Montpellier, of Provence, and especially of Marseilles, it must be injurious to consumptive patients, and should be stricken out of the list of localities favourable to this class of diseases. Another practical consequence which results from the researches contained in this memoir, is the undoubted advantage of diffusing aqueous vapour through the atmosphere of work-shops in which the temperature is very elevated.

5. "The absence of muscular exercise being a frequent cause of phthisis, it is evident that workmen engaged in sedentary occupations should every day use as much ex-

ercise as possible in the open air, taking care to bring into motion those muscles which, during the time of labour, are in a state of unnatural repose."

6. "Finally, the last and most important practical consideration upon which I wish to fix attention, is the advantage which some workmen might derive from a complete change in their occupation, the moment that they begin to experience the last symptom of the disease. Those persons who are under the necessity of labouring for their support, and who cannot seek another climate, and of course unable to devote all their time to the care of their health, and who, if they continued to labour in the injurious profession which they may have embraced, would perish of phthisis, would experience the most happy effects from exchanging their present occupation for one less hurtful. Thus, those whose constitutions are sufficiently robust, might employ themselves in farming, gardening, tanning, &c. Those, on the contrary, whose constitutions are too delicate to undertake such laborious occupations, might employ themselves as cart-wrights, braziers, dyers, grooms, &c."

ADDENDUM.

Having inadvertently omitted to notice the Prussiate of Potash, I take this occasion to express my conviction of its importance as a remedy in the catarrh of phthisis. This medicine has been favourably introduced into notice by Dr. Smart, of Kennebeck, Maine, in a paper published in the thirtieth number of the American Journal of the Medical Sciences. Independent of its power of arresting cough, Dr. Smart informs us that it acts promptly in lessening the action of the heart. Ten to twenty grains is the usual dose for an adult, and may be repeated, morning, noon and night, carefully watching its effects. Dr. Smart's prescription is as follows: *R. ferro-cyanitis potassæ ʒij: aquæ puræ ʒi. m. et ft. sol.* Of this solution he gives from thirty to sixty drops—equivalent to ten to twenty grs. "Forty-five drops—fifteen grains, is as large a dose as it is safe to give as often as once in four or six hours."

EXPLANATION OF THE PLATES.

PLATE I.

Fig. 1 represents a great number of tubercles in the apex of a hepatised lung, taken from a man aged twenty years, who died of pneumonia of ten days continuance. He had, however, been subject for some time previous to pneumonic attacks, to a troublesome cough and impeded respiration. It seems probable, therefore, that the pneumonia supervened on the tubercular affection, and was caused by it; inasmuch as all parts of the lung were almost equally tuberculous and hepatised. Most of the tubercles were very minute, and among the whole series, but five or six had become softened.

Fig. 2. Portion of the superior lobe of the right lung, converted into tuberculous matter, part of which is of a brownish red colour, and part of a dull olive tint; in the midst of the mass the bronchia are seen partially destroyed, and what remains of them highly inflamed. The inferior portion is from the root of the lungs, where the bronchial glands are seen in a state of tumefaction.

The appearances in this preparation might at first glance be mistaken for those of the third, or purulent stage of pneumonia; but the difference was very obvious on dissection, inasmuch as there was no oozing of pus on incising the lung, which, on the contrary, was solid and shining, and distinctly composed of miliary concretions, with a number of small, perfectly characterised tuberculous abscesses. (*See Case 14.*)

PLATE II.

Fig. 1 represents part of the left lung of a man who died of consumption after five months illness: the entire organ was charged with yellowish miliary tubercles, which were in such vast numbers immediately beneath the pleura, as partially to separate that membrane, and permit it to be wholly detached without difficulty; the lung then presenting the appearance of a pustuloid eruption, as represented in the plate. Numerous small abscesses, each surrounded by a ring of crude tubercular matter, were scattered through the lung.

Fig. 2. Angular crude tubercles disseminated in sound pulmonary tissue. (See Case 27.)

Fig. 3. Crude tubercles, some of which have suppurated at the margin: the larger, central tubercle, embraces a portion of melanotic matter, proving that these bodies do not grow by intus-susception, but by the deposit of molecules around the primary granule. (See Case 16.)

PLATE III.

Fig. 1. Transverse section of an enormous encysted tubercle, (occupying nearly all the superior lobe of the right lung,) of a grayish yellow colour, and containing a few small abscesses. The cyst was white, sub-cartilaginous, and a line in thickness. (See Case 3.)

Fig. 2. Portion of the left lung in a hepatised state, which, towards the right side of the figure, is passing into gray induration. The central portion embraces an encysted, calcareous concretion, around which, and also in various parts of the lung, is seen a deposit of melanosis. The spheroidal bodies are tuberculoid granulations. (See Case 15.)

Fig. 3. Gelatinoid infiltration, of mixed olive and rose colour, with interspersed spots showing the transition of the infiltration into tubercular matter. The blood-vessels are destroyed, excepting their internal coat, as described at page 49.

PLATE IV.

Fig. 1. Angular crude tubercles and incipient abscesses, in a mass of engorged lung. (*See Case 18.*)

Fig. 2. Funicular abscesses in the left lung; the bands of condensed, greenish tissue, are traversed by large ramifications of the pulmonary artery. (*See Case 9.*)

PLATE V.

Fig. 1. Portion of the right lung of a young man who died of phthisis (commencing with hæmoptysis,) after an illness of fourteen months. The pleura in this case contained a large quantity of water, and in some places adhered firmly. The middle lobe contained the large encysted abscess represented in the plate; the cyst was less than a line in thickness, and as usual, of a sub-cartilaginous texture. Towards the bottom of the cavity was a cruciform cord of condensed parenchyma, in which the remains of blood-vessels were still obvious. The internal parietes of the cavity were of a straw-colour, and much corrugated. The surrounding pulmonary tissue contained irregular, blackish tubercles, with a solitary spheroidal, crude tubercle. The bronchia opened into the cavity by four or five large orifices.

Fig. 2. Section of the left lung, representing a large encysted abscess, the internal parietes of which are covered with red, extremely vascular granulations: the hæmoptysis with which the patient was harassed for nearly eighteen months, was probably derived from this source. (*See Case 12.*)

PLATE VI.

This plate presents a faithful transcript of the morbid appearances described in *Case 22*. The lower portion of the lung is solidified by grayish, tubercular infiltration: the central portion contains a large abscess, and the superior part a patulous one, surrounded by incipient gangrene. The central abscess is traversed by a branch of the pulmonary artery; and the pleura, on its pericardial surface, is much thickened in consequence of inflammation.

PLATE VII.

Superior lobe of the right lung, presenting several stages of gelatinoid infiltration, violet, gray and yellow, the latter being the crude state, or that which immediately precedes suppuration: hence it is observed to constitute the parietes of the abscesses. The funicular abscess at the superior part of the lung is traversed in various directions by cords, which were still pervious at the time the autopsy was made, and are obviously the remains of blood-vessels: they constitute an example of the fact mentioned in page 148—that vessels may be pervious where they traverse cavities, at the same time that they cannot be traced beyond the parietes of those cavities. (*See Case 2.*)

PLATE VIII.

Profile view of John Little, drawn from life by my friend Dr. S. D. M'Neil, and showing the deformity consequent to a dorsal tumour communicating with the lungs, and projecting over the interscapular region of the right side. (*See Case 24.*)

PLATE IX.

This plate represents a section of the superior lobe of the right lung, &c. of the above named John Little. The lung is replaced by gray induration, consequent to pneumonia; it is also interspersed with yellow tubercles, with vomicæ, and gray, tuberculoid granulations. Towards the apex of the lung is seen a spheroidal cavity, surrounded by a fibro-cartilaginous cyst: from its right, inferior margin, goes out a fistulous canal which communicated with the bronchia: from its posterior (or left margin in the drawing) passes another fistulous canal, which traverses the space between the first and second ribs, and ramifies into smaller channels, all of which open near the junction of the ribs with the vertebræ: the latter are seen with their spinous processes totally denuded, excepting some remains of the interspinous ligaments. Between the ribs (of four of which the oval, transvere sections are seen,) is a deposit of whitish false membranes, almost three-fourths of an inch thick, which connects the ribs together and is firmly attached to the adjacent lung. The curved line to the extreme left shows the outline of the dorsal abscess, as it existed before it broke: and the vertebræ were denuded in the cavity of the abscess, as here represented. (*See Case 24.*)

PLATE X.

The larynx, and part of the trachea, in a state of intense inflammation and ulceration, the cartilages being in many places ulcerated entirely through. (*See Case 31.*)

PLATE XI.

Fig. 1. Portion of the pleura, partially covered with thick, and very firm adhesions, consequent to violent and long continued pleuritis: other portions are interspersed with spheroidal and irregular masses, of the same character and derivation. The black spots, are melanosis of the sub-pleural cellular tissue. (*See Case 20.*)

Fig. 2. represents a portion of tuberculous lung, which, in consequence of partial pneumothorax, has receded from the ribs, but has been prevented from an entire collapse by two flattened cords, one passing from the upper, the other from the lower lobe, and uniting at the pleura costalis. These cords, or funicular adhesions, are composed of membranes resembling the pleura, but filled with yellow, adipose matter. (*See Case 18.*)

PLATE. XII.

Fig. 1. Portion of a tuberculous lung, showing, immediately beneath the pleura, the remains of a small abscess which has become cicatrised and filled up with fibro-cartilaginous matter; from the remains of the abscess proceeds a long fistulous canal, which has also cicatrised, and which was at one period the medium of communication between the abscess and the bronchia. (*See Case 27.*)

Fig. 2. This plate represents the bronchial mucous membrane in a state of intense inflammation (bronchitis,) with small, whitish patches of ulceration. The inflammation has also extended to the trachea. The bronchial glands are seen very much enlarged: the upper ones contain several calcareous masses; while the lower, and largest of them, embraces a surprising number of irregular, bony concretions. (*See Case 14.*)

PLATE XIII.

Section of the superior lobe of the right lung of a man who died of pneumonia complicated with acute phthisis. The lobules are hepatised, while their investing cellular tissue is charged with tubercles, mostly in the crude state, but here and there broken into small abscesses. (*See Case IV. page 62.*)

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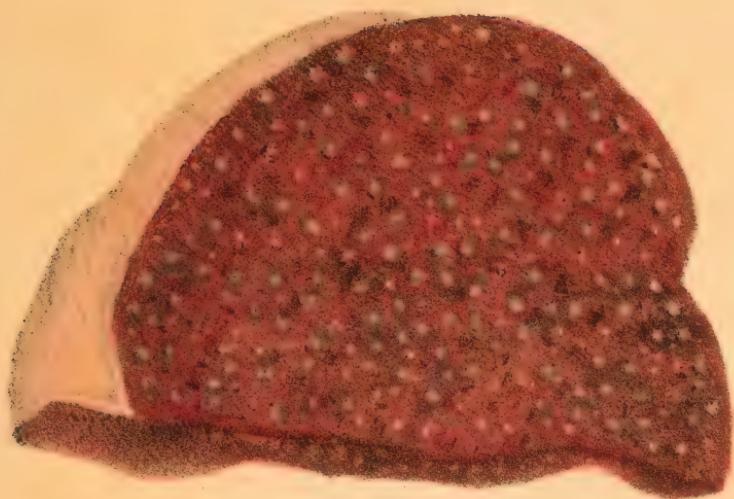


Fig. 2.



Fig. 1.

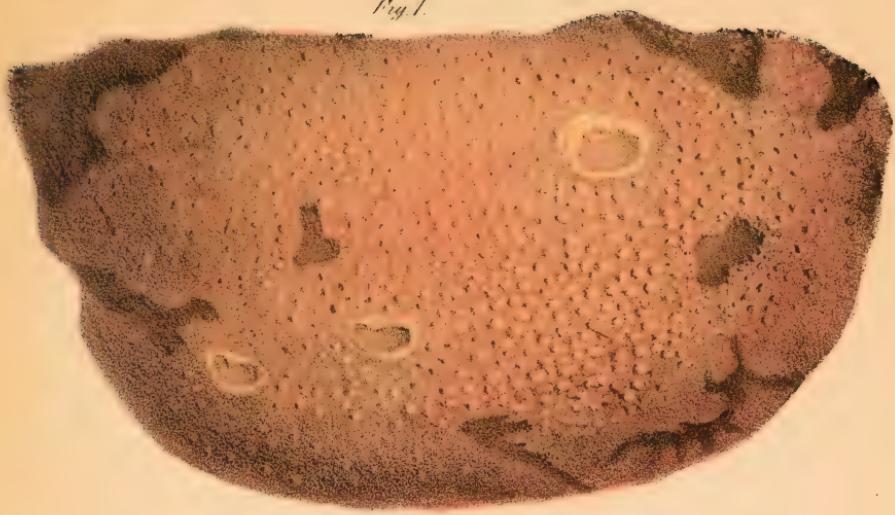


Fig. 2

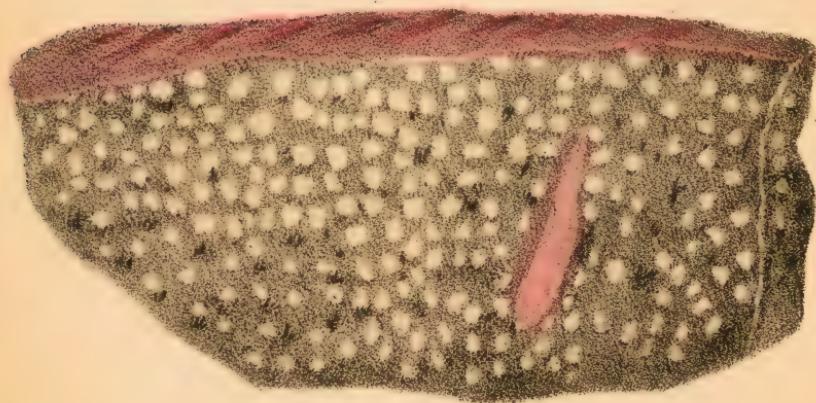


Fig. 3.



Fig. 1.

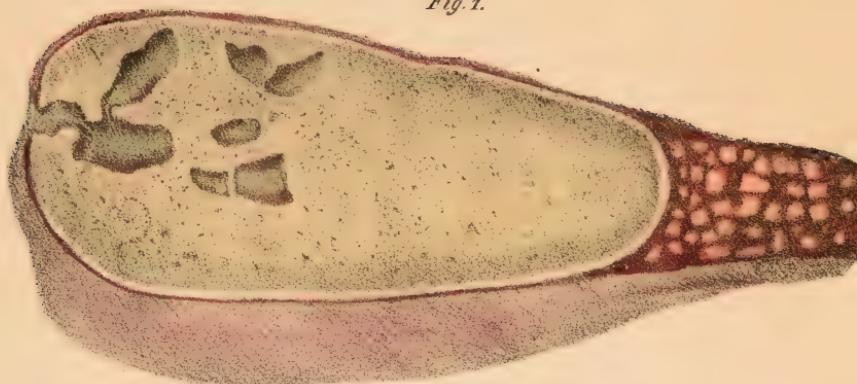


Fig. 2.



Fig. 3.



Fig. 1.



Fig. 2.

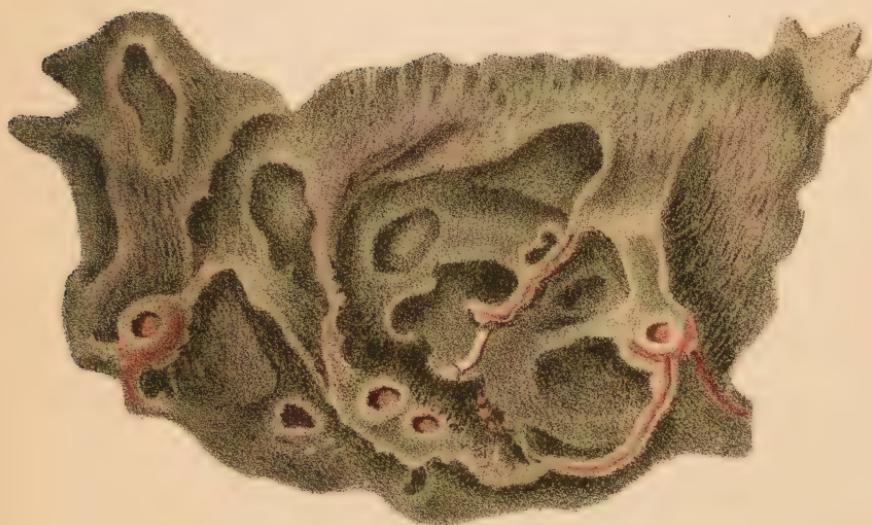
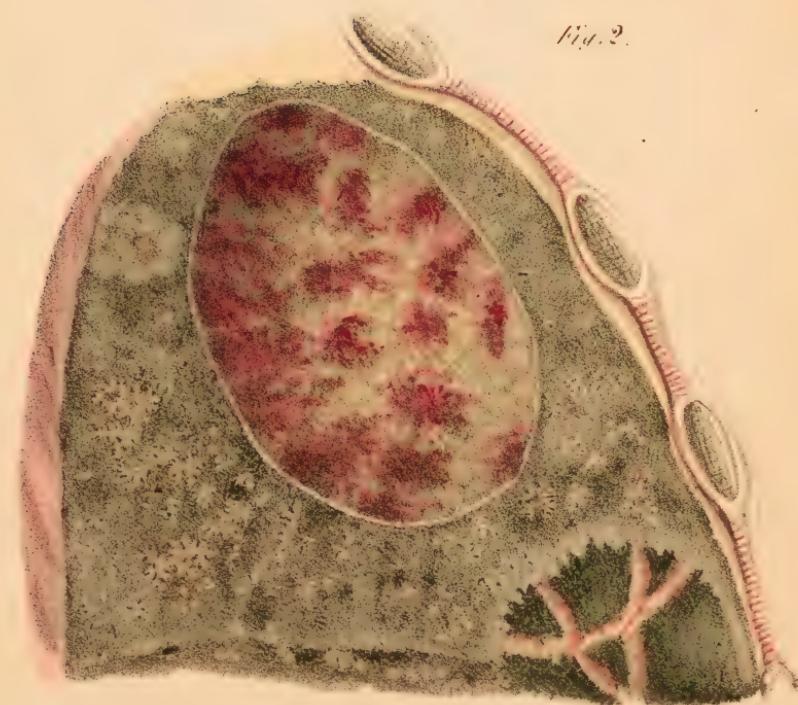
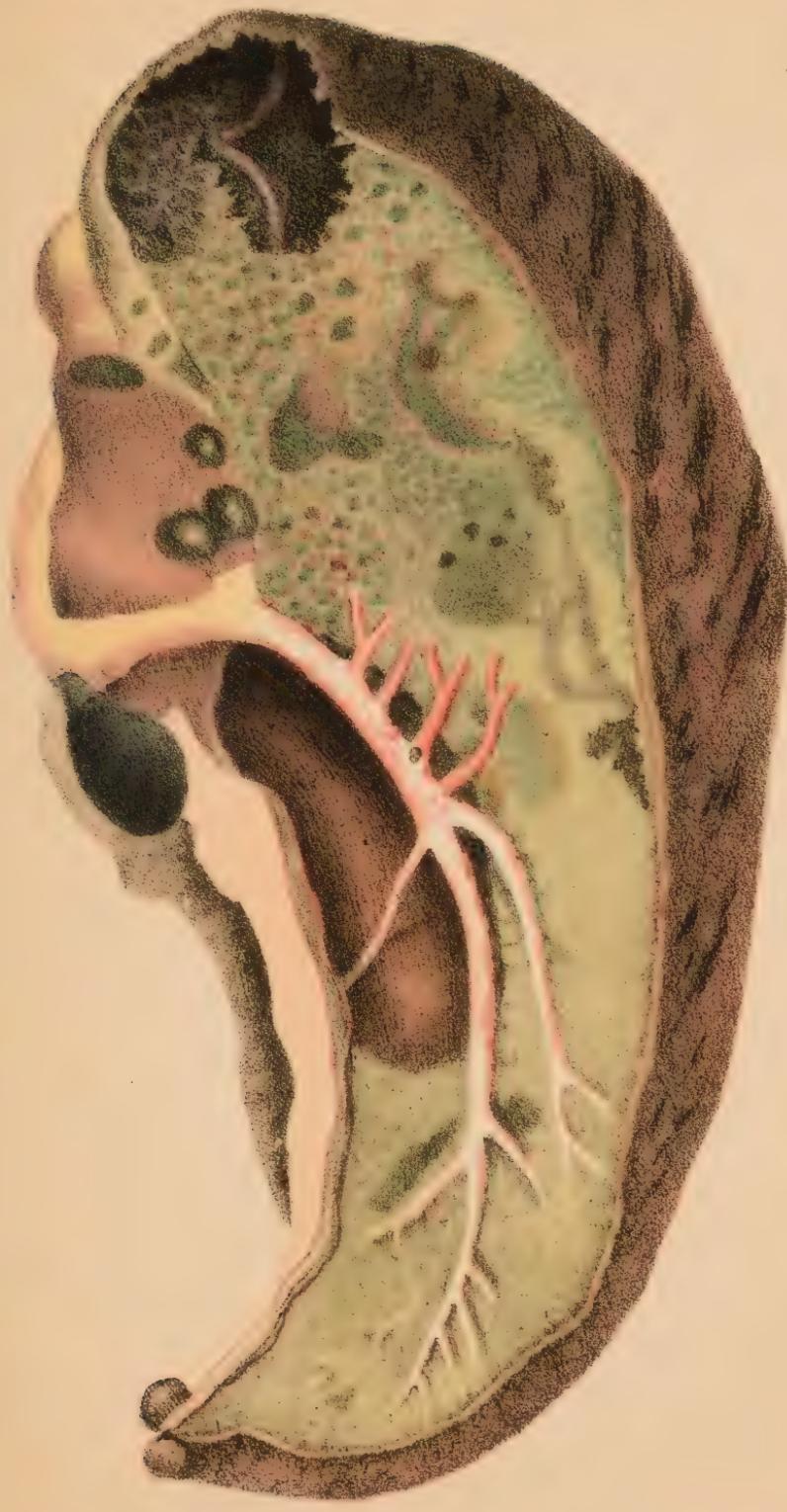






Fig. 2.





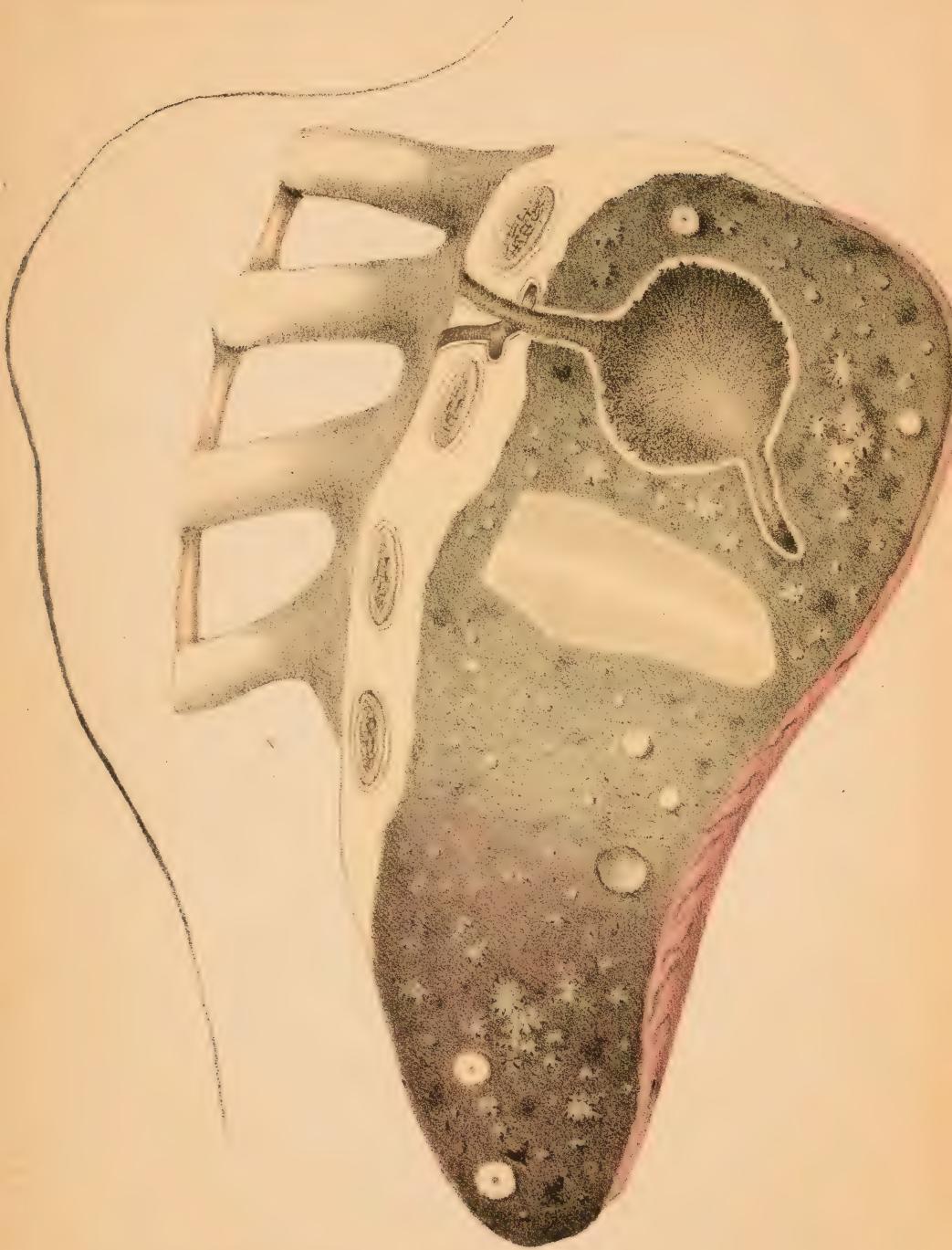




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Fig. 1.



Fig. 2.

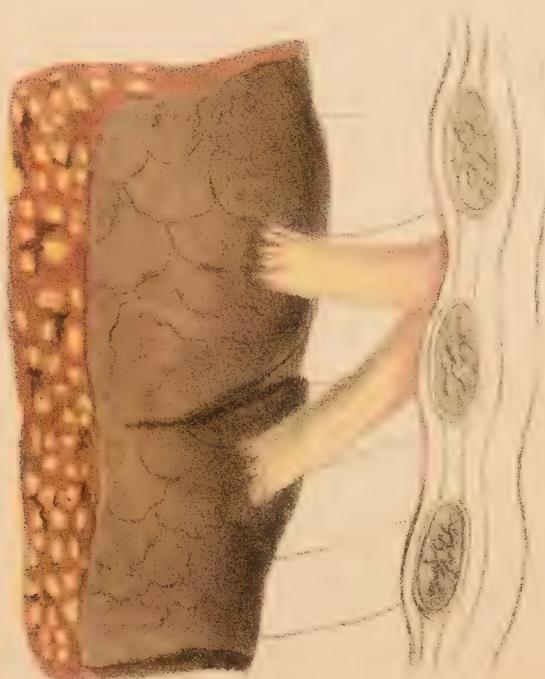
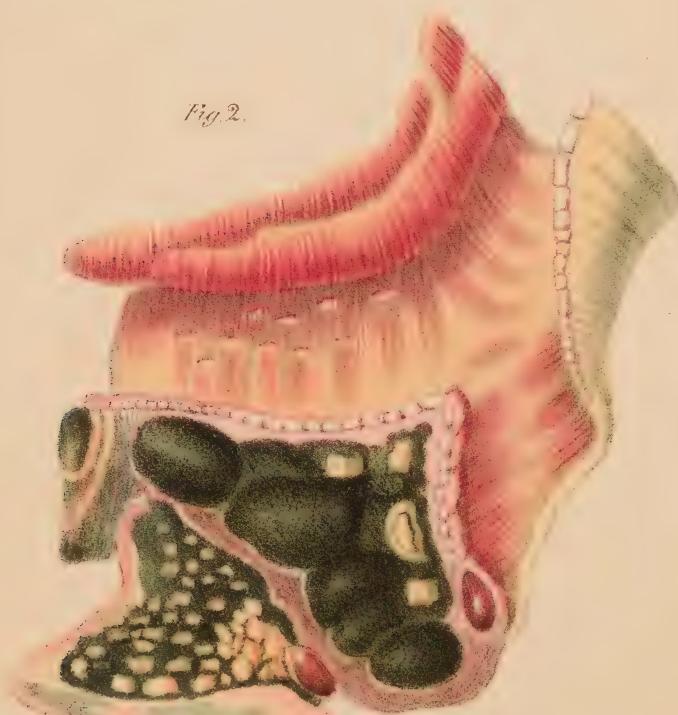


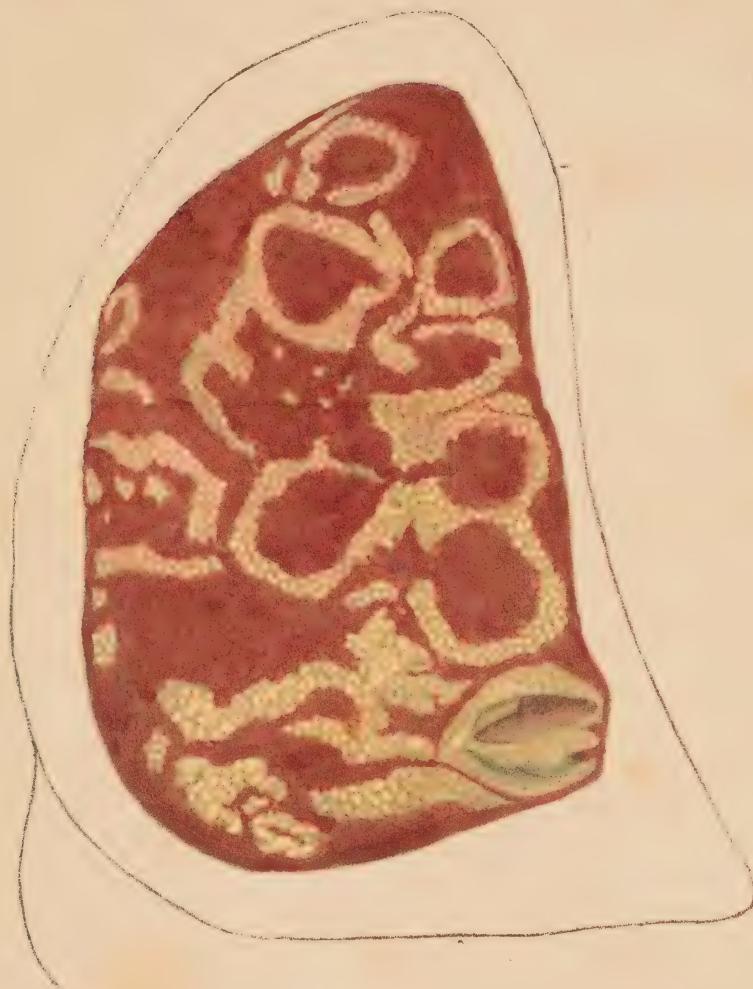


Fig. 1.



Fig. 2.





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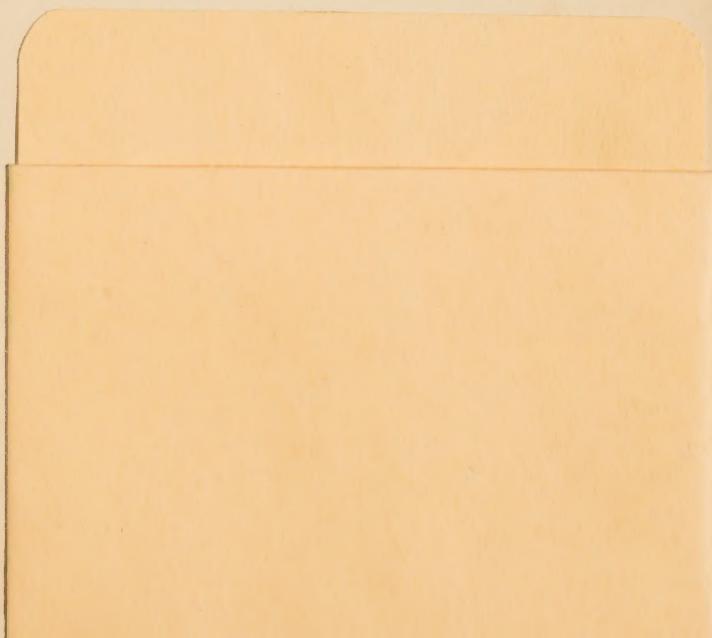
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